McGILL UNIVERSITY

MEDICAL PHYSICS UNIT

Annual Report : January-December 2012

June 2013

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1. *INTRODUCTION*

The main areas of interest in medical physics at present are: (i) treatment of cancer by ionizing radiation (radiation oncology physics); (ii) diagnostic imaging with x rays, ultrasound and nuclear magnetic resonance (diagnostic radiology physics); (iii) diagnostic imaging with radionuclides (nuclear medicine physics); and (iv) the study of radiation hazards and radiation protection (health physics). In recent years medical physics has grown into a complex multidisciplinary science with involvements and affinities to biomedical engineering, health and life sciences, systems biology and biophysics.

Medical physics is a rapidly expanding profession and job opportunities for graduates of medical physics programs remain excellent locally, nationally and internationally. McGill, as one of 9 universities in Canada and one of 43 universities in North America with accredited graduate programs in medical physics, is playing an important role in academic training of professionals for this important, field involved with diagnosis and treatment of human disease. The training in medical physics at McGill is done under the auspices of the Medical Physics Unit (MPU), an academic unit in the Faculty of Medicine. The MPU graduate programs in medical physics were first accredited in 1993 for a period of 5 years and reaccredited in 1998, in 2003, and 2008 for additional 5-year periods. The current 5-year accreditation term will expire on December 31, 2013 – the reaccreditation document has been submitted to the accrediting body for review. McGill was the third university in North America with such accreditation and between 1993 and 2004 it was the only Canadian university with such an accreditation.

Since 1997 the MPU also provides a residency program in radiation oncology physics. In this program graduates in medical physics receive a structured clinical-professional training in radiation oncology physics. The program received its first accreditation in 2000, and was re-accredited in 2005 and 2010 for additional 5-year period. The current accreditation will expire on December 31, 2015. McGill is one of eight institutions in Canada and one of 53 in North America with this type of accreditation.

The accreditation of graduate and residency programs in medical physics is provided by the *Commission on Accreditation of Medical Physics Educational Programs* (CAMPEP) sponsored by four organizations: the *American Association of Physicists in Medicine* (AAPM); the *American College of Medical Physics* (ACMP); the *American College of Radiology* (ACR); and the *Canadian College of Physicists in Medicine* (CCPM).

2. *FACTS-IN-BRIEF ON THE MEDICAL PHYSICS PROGRAMS AT McGILL*

Details regarding the graduate programs and research in medical physics can be found on the Medical Physics Unit website at: **mcgill.ca/medphys**.

Established:	September 1979 by the Faculty of Medicine of McGill University in Montréal	
Directors:	M. Cohen	*(September 1979 to August 1991)*
	E.B. Podgorsak	*(September 1991 to December 2008)*
	J. Seuntjens	*(January 2009 to present)*

GRADUATE PROGRAMS:

- ***Graduate Program Director (GPD):*** Jan Seuntjens, Ph.D., FCCPM, FAAPM
- ***Degrees offered:*** M.Sc. & Ph.D. in medical physics
- ***Accreditation:*** CAMPEP* accredited the M.Sc. & Ph.D. programs since 1993
- ***Re-accreditation:*** CAMPEP* re-accredited both programs (1998, 2003 & 2008): re-accreditation application submitted for 2013 review
- ***M.Sc. degrees conferred to date:*** **206**
- ***Ph.D. degrees conferred to date:*** **31**
- ***Current M.Sc. student enrollment:*** **16**
- ***Current Ph.D. student enrollment:*** **12**
- ***Number of mandatory courses:*** **12 (M.Sc), 2 (Ph.D)**
- ***Number of academic faculty:*** **7**
- ***Number of clinical faculty:*** **19**
- ***Number of affiliated members*** **2**

RESIDENCY PROGRAM IN RADIATION ONCOLOGY PHYSICS:

- ***Residency Program Director (RPD):*** William Parker, M.Sc., FCCPM
- ***Accreditation:*** CAMPEP* accredited the Residency program (2000) for 5 years
- ***Re-accreditation:*** CAMPEP* re-accredited the program (2005, 2010) for 5 years
- ***Number of graduates to date:*** **37**
- ***Current enrollment:*** **6**
- ***Program duration:*** **2 years**
- ***Number of mandatory rotations:*** **4**
- ***Number of mandatory courses:*** **4**

* ***CAMPEP***, the ***Commission on Accreditation of Medical Physics Educational Programs***, is sponsored by:

- *American Association of Physicists in Medicine (AAPM)*
- *American College of Medical Physics (ACMP)*
- *American College of Radiology (ACR)*
- *Canadian College of Physicists in Medicine (CCPM)*

3. ***GENERAL OBJECTIVES OF THE MEDICAL PHYSICS UNIT***

1) *To promote the field of medical physics through teaching, research and clinical service.*

2) *To encourage interest, education, training and research in medical physics.*

3) *To join in one academic unit (Medical Physics Unit) the various members of McGill departments, McGill University Health Centre and Jewish General Hospital who, through their academic training in physics, engineering or a related science and through work in clinical and academic environments, support the objectives (i) and (ii) above.*

4) *To offer a graduate program leading toward an M.Sc. degree in medical physics.*

5) *To offer, in conjunction with McGill's Physics and Biomedical Engineering departments, a graduate program leading toward a Ph.D. degree in medical physics.*

6) *To offer a residency program in radiation oncology physics.*

7) *To maintain CAMPEP accreditation of the M.Sc. and Ph.D. academic programs as well as the residency training program in radiation oncology physics.*

8) *To offer support to other institutions wishing to provide a residency program in radiation oncology physics through affiliation with the CAMPEP-accredited McGill program.*

9) *To encourage, promote and excel in research in the application of physics in diagnosis and treatment of human disease.*

10) *To promote McGill as an important institution in the international medical physics community through excellence in teaching of, and research in, medical physics.*

11) *To promote national and international medical physics organizations through active participation of the Medical Physics Unit and its members in these organizations.*

12) *To encourage links and collaboration between medical physicists, clinicians and basic scientists with the goal of developing and improving methods for diagnosis and treatment of human disease.*

13) *To provide medical physics consultation services to McGill institutions, national and international organizations and the general public, as required.*

14) *To initiate a structured student recruitment program at the Ph.D. level and to provide a stimulating research environment to these candidates.*

15) *To work with clinicians and basic scientists in the development of a strategic research program in radiation oncology.*

16) *To work with industry, government agencies, other CAMPEP accredited programs as well as international academic institutions to update and modernize the graduate programs so that graduate students have access to expertise and equipment most suitable for their project and education.*

4. ***MEETING THE OBJECTIVES OF THE MPU FOR THE PAST ACADEMIC EVALUATION PERIOD***

The MPU is in relatively good shape: its teaching programs in medical physics on the M.Sc., Ph.D. and residency levels are accredited and respected around the world; the number of students is high; and the staff are very active on the local, national, and international level.

However, one of the issues faced over the past few years has been the severe loss in terms of key academic faculty of the unit. To maintain the teaching program the MPU had to heavily rely on clinical faculty thereby creating even more severe budgetary problems. Despite these issues the MPU has been able to sustain and maintain its student enrolment and research programs: the student body in the last 30 years has more than quadrupled (from around 8 to 40 students per year to date), while the faculty complement has halved (from typically 4 core faculty to 2). However, the maintenance of vigorous research programs associated to tenure track academic medical physicists will become essential for the MPU to maintain its longstanding CAMPEP accreditation. In recognition of this the Dean of Faculty of Medicine has given green light to the hiring of two additional tenure track faculty. This hiring process for one of these is nearing completion.

The employment situation of M.Sc. medical physicists has become somewhat more restricted in the face of the 2014/2016 ABR/CCPM deadline. By this time every clinical medical physicist wishing to sit for the certification exams of the ABR or CCPM must come from a CAMPEP accredited residency program. Despite the increase in CAMPEP-accredited residency programs, access to these programs is severely restricted for M.Sc. graduates, since they compete often with Ph.D. candidates applying to the same positions. The recruitment philosophy of the M.Sc. program, hence, is tending towards recruitment for candidates who are more likely interested in the Ph.D. program. In the past year the recruitment cohort of M.Sc. candidates consisted of 45 candidates, out of which the incoming cohort for September 2013 is expected to consist of 8 students with GPA typically above 3.5.

5. ***OBJECTIVES OF THE MPU FOR 2013***

The goals for the upcoming academic year revolve around the 2013 re-accreditation exercise of the teaching program as well as the need to further develop the Unit's research capacity and support structure:

1) To rebuild the academic program staffing and appoint new faculty
2) To continue graduate program curriculum revisions commensurate recent developments in Medical Physics and its interaction with associated sciences.
3) To further improve the MPU's operating budget to cover adequately the teaching responsibilities of non-McGill clinical physics staff (rate at McGill is $1500 per credit).
4) To continue attempts to secure teaching assistantships to MPU graduate students for support of clinical faculty course teaching
5) To continue attempts to secure funds to equip two important laboratory courses: "Lab in Radiation Oncology Physics" & "Lab in Diagnostic Radiology Physics".
6) To maintain and increase productivity with regard to standard academic indicators (number of publications, presentations, graduating students, etc.).

6. *HIGHLIGHTS OF THE 2012 CALENDAR YEAR*

1) **Davis, Stephen**: Farrington Daniels Award for best paper in Dosimetry in the Journal Medical Physics, 54th Annual Meeting of the American Association of Physicists in Medicine, July 2012.
2) **El Naqa, Issam**: Outstanding Reviewer – 2012, International Journal of Radiation Oncology, Biology, Physics.
3) **El Naqa, Issam**: Best Reviewer– 2012, Medical Physics Journal
3) **El Naqa, Issam**: New Investigator Award of the Canadian Institutes of Health Research CIHR, 2012.
4) **Tomic Nada**: Special recognition by Radiological Society of North America (RSNA), *In vivo skin dose measurements during CBCT guided IGRT in rectal and prostate cancer patients*, Presentation at the RSNA 98th annual assembly, November 2012.
5) **Renaud, James**: Third prize, *Development of a graphite probe calorimeter for absolute clinical dosimetry: Numerical design optimization, prototyping and experimental proof-of-concept*, J.R. Cunningham Young Investigator Symposium, Annual Meeting of the Canadian Organization of Medical Physicists (COMP), June 2012.
6) **Renaud, James**: MedTech Challenge finalist – Competition for the commercialization of medical devices, Campus des Technologies de la Santé (CTS), *Graphite probe calorimeter: The next detector in radiation therapy*, September 2012, Montreal.
7) **Alexander, Andrew**: McGill University MedStar Award 2012, *Comparison of modulated electron radiotherapy to conventional electron boost irradiation and volumetric modulated photon arc therapy for treatment of tumor bed boost in breast cancer*.
8) **Pike, G. Bruce**: James McGill Professor, McGill University, 2007-2013.
9) **Pike G. Bruce**: Killam Professor, Montreal Neurological Institute, 2003-present.
10) **Seuntjens, Jan**: Herbert S Lang Award in Oncology and Surgery, McGill University Health Centre (2010-present).
11) **Reader, Andrew**: Killam Professor, McGill University, 2012-present.
12) **Seuntjens, Jan**: Chair of Report Committee, *"Prescribing, Recording, and Reporting of Stereotactic Treatments with Small Photon Beams"*, International Commission of Radiation Measurements and Units (ICRU), 2009-present.

7. *THE 2012 CALENDAR YEAR*

7.A. Introduction

At the beginning of the 2011-2012 academic year in September 2011, the MPU attracted 11 new students to its first-year class (5 from Quebec, 4 from another province, and 2 originating from abroad), bringing the total registration of graduate students (M.Sc. and Ph.D.) to 34 students on September 01, 2011. Nine of the 11 first-year M.Sc. students successfully completed their didactic medical physics courses during the Fall and Winter terms of 2011-2012 and one student withdrew from the program due to unsatisfactory academic performance. One student withdrew to pursue an alternate program at another institution. All remaining Fall 2011 first-year students are well into their M.Sc. thesis research, 3 at the Montreal General Hospital in radiation oncology physics, 1 at the Montreal Neurological Institute in imaging physics, 4 at the SMBD-Jewish General

Hospital in radiation oncology physics, and 1 at the Hôpital Maisonneuve-Rosemont in radiation oncology physics.

At the beginning of the 2012-2013 academic year in September 2012, the MPU attracted 7 new students to its first-year class (6 from Quebec, and 1 from another province), bringing the total registration of graduate students (M.Sc. and Ph.D.) to 29 students on September 01, 2012. Six of the 7 first-year students successfully completed their Fall & Winter 2012-2013 coursework. One student opted to withdraw from the program at the end of the Winter semester to take up an employment opportunity. The 6 remaining first-year students have all selected a thesis research supervisor and are beginning their projects in Summer 2013, 3 at the Montreal General Hospital, 2 at the SMBD-Jewish General Hospital, and 1 at the Montreal Neurological Institute.

7.B. Medical Physics Bursaries

Recognizing the shortage of medical physicists in North America in general and in Quebec in particular, the Quebec government started a medical physics bursary program in 1999. One bursary at $17,000 per year for a total of 2 years was allocated to McGill for support of a medical physics graduate student beginning medical physics studies in each of the 2011-2012 and 2012-2013 academic years.

In each of the academic years beginning Fall 2011 and Fall 2012, one M.Sc. student was recommended for the 2-year bursary at $17,000 per year by the MPU and their application was approved by the Quebec Ministry of Health. As the recipient has to commit to be employed in Quebec the bursary provides not only support to the student but also an important flow of graduates beneficial to Quebec. The bursary program is expected to continue for the next year but it is expected that within the next few years the program will shift towards support for residency trainees, in addition to graduate training, to offset the bottleneck that now exists for access of M.Sc. graduates into clinical medical physics jobs. The bursary system (graduate or residency) will not only help Quebec hospitals find suitable candidates for their medical physics openings in the near future but will also help the MPU in playing an even more important role in training of medical physicists for Quebec institutions.

7.C. Staff of the Medical Physics Unit ..... *(Appendix I)*

The staff of the MPU consists of 27 staff members (25 internal, 2 affiliated) and a full-time Administrative Coordinator (Margery Knewstubb). The MPU Administrative Coordinator holds the only permanent staff position in the MPU, and organizes the day-to-day activities of the MPU, deals with graduate students on a daily basis, corresponds with potential applicants to the medical physics program, and records minutes of MPU staff meetings.

The MPU is run by a Director who is appointed by the Dean of Medicine. Since 1991 the directorship of the MPU is a part-time position, and is filled by the director of the *Medical Physics Department* of the McGill University Health Centre. Four committees help with the running of the MPU: the *Graduate Committee*, *Seminar Committee*, the *Curriculum Update Committee* and the *Alumni Committee*.

The **Graduate Committee** (Dr. J. Seuntjens, chair; M. Knewstubb; Dr. G.B. Pike; Dr. I El Naqa) evaluates applications to the academic programs, decides on the number of candidates to be accepted for a particular academic year, and recommends the most suitable candidates for admission. During the 2011-2012 and the 2012-2013 academic years, 56 and 59 complete applications were received by the MPU, respectively, and the graduate committee recommended to McGill 24 and 15 candidates for admission into the 2011-2012 and 2012-2013 academic cohorts, respectively. For more information, please see Section 8.C.

The **Seminar Committee** (chair 2012: Mr. H. Patrocinio, local arrangements MUHC, Dr. A. Sarfehnia; JGH: Dr. S. Devic) organizes the medical physics seminar series, a bi-monthly collection of seminars given by MPU staff, outside visitors or graduate students to staff and students of the MPU. The medical physics seminars organized during the Winter semester 2012 and the Fall & Winter semesters of the 2012-2013 academic year are listed in *Appendix XV*.

The **Curriculum Update Committee** (chair Dr. J Seuntjens, Dr. I El Naqa, Dr. B Pike, Dr. J Kildea, Dr. S. Devic) reviews the curricula for the M.Sc. and Ph.D. programs. Changes to the M.Sc. course curriculum have been implemented.

The **Alumni Committee** (chair Dr. E. Soisson, Dr. J Seuntjens, Dr. J Kildea, M. Knewstubb, T. Nisic) aims to organize and improve the relations between the MPU and its alumni. One initiative is the establishment of the Ervin B. Podgorsak Scholarship for studies in Medical Physics.

All academic members of the MPU, except for the two affiliated members, hold primary appointments in other major departments either of the McGill's Faculty of Medicine. For more information see *Appendix I*.

The two affiliated members work outside McGill; Dr. R. Richardson at the Atomic Energy of Canada in Chalk River, Ontario and Dr. W. Wierzbicki at the Maisonneuve-Rosemont Hospital in Montreal. Both have special links with the MPU, Dr. Richardson as an academically inclined health physicist and Dr. Wierzbicki as a lecturer and thesis supervisor.

During Winter 2012, Dr. Podgorsak, Emeritus Professor, continued to participate in teaching the course MDPH 602 (*Applied Dosimetry*). However, effective Fall 2012 he is no longer teaching in the MPU.

Appendix I provides a list of the MPU staff, their academic rank, divisional affiliation (clinical or imaging) and source of salary support (University, hospital or affiliated institution). Also given in *Appendix I* is a complete list of the staff of the Medical Physics Department of the MUHC.

The main responsibilities of clinical physicists are related to clinical aspects of radiation therapy; however, the clinical physicists get involved with teaching of didactic medical physics courses and laboratories, as well as with co-supervision of M.Sc. graduate students. The engineers are involved with teaching of medical electronics (Léger).

7.D. Graduates of the MPU Graduate Programs .....*(Appendices II & III)*

From January to December 2012, 8 M.Sc. degrees in medical physics were granted through the MPU (*Appendix II*). Three of the M.Sc. graduating students are continuing with Ph.D. studies in medical physics; three took up employment opportunities (Hôpital Maisonneuve-Rosemont, Montreal; Hôpital Nôtre-Dame, Montreal; Centre de services et santé sociaux Laval-CSSSL, Quebec; McGill University Health Centre); and one entered medical school at McGill University. Five additional M.Sc. degrees in medical physics were granted in February 2013 and awarded in the Spring 2013 graduation cohort.

In January 2012, one student (A. Alexander) successfully passed his Ph.D. oral defense exam and obtained his Ph.D. Medical Physics degree. He immediately commenced a clinical residency position at the Ottawa Hospital Regional Cancer Centre. In March 2013, one student (E. Chung) successfully passed her Ph.D. oral defense exam and simultaneously obtained her Ph.D. Medical Physics degree. She was accepted shortly thereafter to a Residency position at the University of California-Davis.

The current overall number of McGill graduates in medical physics stands at 206 M.Sc. degrees and 31 Ph.D. degrees. Considering that the Canadian Organization of Medical Physics (COMP) counts a total of some 400 active members, it is obvious that McGill's MPU continues to play an important role in the training of medical physicists in Canada. It is interesting to note that over 50% of medical physicists practicing in Quebec received their degrees from McGill's MPU. A listing of the McGill M.Sc. and Ph.D. graduates in medical physics to date and their current employment are given here:

M.Sc. Medical Physics graduates: 1980-2013
http://www.medphys.mcgill.ca/alumni/mscgrad.html

Ph.D. Medical Physics graduates: 1980-2013
http://www.medphys.mcgill.ca/alumni/phdgrad.html

A statistical summary providing the demographic data for all M.Sc. and Ph.D. graduates to date is shown in *Appendix III*.

7.E. Graduates of the Residency Training Program .....*(Appendix IV)*

During the 2012 calendar year, 4 residents completed the two-year Residency Training Program in Radiation Oncology Physics (A. Sarfehnia, J. Holmes, S. Davis, J. Kildea). Since the Residency Training Program in Radiation Oncology Physics was first accredited, between 1999-2010, 23 residents have completed all requirements of the Training Program - an additional 14 residents completed their training in the non-CAMPEP accredited program between 1980-1998, bringing the total number of McGill University Residency graduates to 37. A listing of the graduates and various relevant data are provided in *Appendix IV*.

8. *PLANNING & PERFORMANCE*

8.A. Undergraduate Student Teaching

Undergraduate students from various departments and universities attend summer research projects with Faculty at the MPU. For the summer of 2012 there were 6 such students.

8.B. Teaching ..... *(Appendices V & VI)*

The teaching distribution during the 2012 calendar year is shown in the list of instructors for didactic courses in *Appendix V*. During the 2012 calendar year, all 12 mandatory graduate courses underwent evaluations by students. The results were circulated to staff, are filed in the MPU office, and their summaries without instructor identification are enclosed as *Appendix VI*.

All individual instructors were evaluated separately and also 2 laboratory courses, having several instructors each, were evaluated based on the course itself as opposed to an individual instructor. On a scale of 1 (bad) to 5 (excellent) and averaged over all registered students, the evaluations for the Winter 2012 semester ranged from 4.16 to 4.84, for the Summer 2012 semester they ranged from 3.64 to 4.64, and for the Fall 2012 semester they ranged from 4.37 to 4.91.

A conclusion can be made that the MPU students are reasonably satisfied with the quality of education they receive, but that they also send a message to certain instructors that improvements in their teaching methods and attitudes could be made. Considering that the majority of individual instructors who taught didactic or laboratory courses during the 2012 calendar year come from the ranks of clinical physicists who essentially volunteer their time and efforts to the academic activities of the MPU, the teaching evaluations attest to an excellent collaboration between the academic and clinical physicists of the MPU as well as to considerable commitment from the clinical staff to offer good quality teaching.

8.C. Student Retention ..... *(Appendices VII to IX)*

On December 31, 2012 the MPU had 27 full time students (male : female ratio is 16 : 11) at various levels of their graduate studies (15 M.Sc. and 12 Ph.D.). There were also 2 "additional session" students (finishing thesis requirements), and 5 students having finished thesis requirements and awaiting February 2013 graduation. Students who began either their first year, second year, or additional session of M.Sc. medical physics studies in Fall 2012 are listed in *Appendix VII*.

The 12 students at various stages of their Ph.D. thesis work during Fall 2012 are listed in *Appendix VIII*. All 12 have either already passed the preliminary examination at the Physics department of McGill.

The summary of student statistics for the **end of the 2011-2012 academic year** is as follows:

Total registration on June 01, 2012	32
Completed first year course requirements	10
Total M.Sc. graduates in 2012 calendar year	8
Total Ph.D. graduates in 2012 (oral defense: January 2012)	1

The summary of student statistics for the **start of the 2012-2013 academic year** is as follows:

Complete applications to the M.Sc. program (Fall 2012)	59
Accepted to the M.Sc. program	15
Registered first-year in the M.Sc. program (Fall 2012)	7
Total registered in the M.Sc. program (Fall 2012)	19
Total registration (M.Sc. & Ph.D., on September 01, 2012)	30

For the **current 2012-2013 academic year** the MPU office received 59 completed applications to the M.Sc. program in medical physics. Of the 59 potential students, 15 were accepted for admission, 7 declined the admission offer, and 7 registered in first year didactic studies in September 2012.

8.D. Research.....*(Appendices IX through XIV)*

The calendar year 2012 in relation to teaching, research, and service was a normal year for the MPU, with all performance indicators fairly stable in comparison to previous academic years. As demonstrated by the lists of **publications** (x70, *Appendix IX*), **published abstracts** (x69, *Appendix X*), **invited presentations** (x11, *Appendix XI*), and **presentations at national and international conferences** (x31 *Appendix XII*), all for calendar year 2012, the MPU staff are productive, representing with distinction McGill's involvement in medical physics research.

Academic productivity of MPU staff from 1996 to December 31, 2012 can be found at the following URLs:

http://www.medphys.mcgill.ca/academic/listofpublications.html
list of published papers;
list of published abstracts;
list of invited presentations;
list of presentations at national or international meetings.

The listing of research and teaching grants held by the MPU staff (*Appendix XIII*) also attests to the respectable professional standing of the MPU staff members. It should be noted that the grants are generally attained under the auspices of the grantee's primary department. Current research interests of the 27 MPU academic staff members are shown in *Appendix XIV*.

8.E. Other activities of the MPU .....*(Appendix XV)*

Three **meetings of the MPU academic staff** were held during the 2012 calendar year:

- *on January 11, 2012: completion of the first and start of the second semester of the 2011-2012 academic year*;
- *on May 02, 2012: completion of the second semester and start of M.Sc. thesis research work of the 2011-2012 academic year*;
- *on September 12, 2012: start of the 2012-2013 academic year*.

The purpose of the staff meetings is to discuss the issues affecting the MPU in general and the performance of graduate students in particular. Minutes of each staff meeting are taken by the graduate coordinator and distributed to staff and the Dean of Medicine as soon as possible following each meeting. The minutes of all staff meetings are filed in the MPU office and available for inspection upon request.

During the Winter semester of the 2011-2012 academic year and the Fall semester of the 2012-2013 academic year, the MPU organized regular **medical physics seminars** given by staff, graduating students or visiting scientists. The frequency of the seminars averaged two per month in the Fall semester and one per week in the Winter semester (*location*: Osler Amphitheatre at the Montreal General Hospital; *time*: Friday noon). The presentations are video linked to the JGH to allow MPU members there to attend without significantly disturbing their clinical activities. The attendance of seminars is mandatory for graduate students and is verified through a sign-in sheet. A seminar committee chaired by Mr. H. Patrocinio organizes the seminars and a listing of the MPU medical physics seminars during the 2012 calendar year is given in *Appendix XV*.

All McGill graduate students in medical physics are required to attend **weekly formal research presentation meetings** (Fridays at 9:15 a.m.). The presentations are given either by staff or students. At least once every three months each student presents his or her research work and results, and thus gains practical experience on organizing and giving scientific presentations. The speaker of a given seminar is introduced by the presenter of the previous seminar. Student attendance is compulsory and verified through a sign-up sheet. The senior Ph.D. student, who also serves as a student representative, organizes the weekly research seminars and organizes the sign-up sheet.

All graduate students attend the weekly **informal research meetings** (Thursday 11:30 am) where students discuss daily problems and solutions in their research projects preceded by a review of journal papers. Discussions are performed in subgroups where students working on related subjects discuss. There are currently four subgroups of 3 to 5 students: (1) beam modeling and modulated electron therapy; (2) dosimetry and clinical; (3) imaging and (4) radiobiology. In each group students are responsible to invite attendance of MPU staff suitable for their projects. Each fourth meeting is a group meeting of the entire group, with compulsory attendance of all students.

The weekly **clinical physics meetings** of the MUHC Medical Physics Department are open to graduate students and some with particular interests in radiation oncology attend them regularly. Students are also encouraged to attend the **weekly seminars** organized by the Radiation Oncology Department.

Students are encouraged to submit their work for presentation at national and international scientific meetings, either as regular presentations or as presentations during young investigator symposia. During the past 11 years, MPU students received 6 awards in the J.R. Cameron AAPM young investigator symposia, 4 awards in the J.R. Cunningham COMP/CCPM young investigator symposia, and 1 award in the young investigator symposium of the ICCR.

8.F. Committees and Boards .....*(Appendices XVI and XVII)*

As shown in *Appendices XVI* and *XVII*, the MPU staff members are active on committees and boards within and outside of McGill.

M.D.C. Evans serves as the Chairman of the Radiation Safety Committee for the MUHC.

Currently, the MPU members serve on Boards of Directors of the two Canadian medical physics organizations: the *Canadian College of Physicists in Medicine* (CCPM) and the *Canadian Organization of Medical Physicists* (COMP).

MPU staff members currently also serve on Boards of American Medical Physics organizations: the *Commission on Accreditation of Medical Physics Education Programs* (CAMPEP); the *American Association of Physicists in Medicine* (AAPM); and the AAPM Summer School.

Of the 23 MPU academic members, 4 are certified as Members of the CCPM and 8 are certified as Fellows of the CCPM. One of the Fellows of the CCPM (Seuntjens) is also a Fellow of the AAPM. Two of the Fellows of the CCPM (Patrocinio, Podgorsak) and four of the Members of the CCPM (Gauvin, Ruo, Soisson, Hobson) are certified by the *American Board of Radiology* (ABR), one also by the *American Board of Medical Physics* (ABMP) (Gauvin). MPU members are also active on AAPM, International Atomic Energy Agency (IAEA), and International Commission of Radiation Measurements and Units (ICRU) Task groups, Work Groups, committees and subcommittees. For a full list, see *Appendices XVI and XVII*.

9. ***EVALUATION OF PERFORMANCE***

As evident from the *Highlights* above and the *Appendices* to this report, the MPU staff and students have during the past academic year continued to bring some prestige to the University. They also fulfilled the basic objectives of the MPU. The MPU is known worldwide for its high quality teaching programs, and its M.Sc. and Ph.D. graduates generally do not have difficulties in finding suitable jobs upon graduation.

As shown in *Appendices II* through *IV*, graduates of McGill medical physics programs and the residency program are distributed in institutions throughout Quebec, Canada, North America and around the World; quite a number of them in leadership positions. This attests to high standards of the McGill programs, helps with the retention of the CAMPEP accreditation, and attracts high quality graduate students into the programs.

One may state that 2012 was relatively stable for the MPU in relation to teaching, research, and service, with all performance indicators similar to those of previous academic years, providing the M.Sc. and Ph.D. students in Medical Physics with the academic standards they expected from McGill.

10. ***RESOLUTION OF MAJOR STAFF ISSUES AFFECTING FUTURE ACCREDITATION OF MPU PROGRAMS***

Major problems with regard to tenure track academic staff reduction have had a deleterious effect on the MPU's performance and retention of staff over the recent five years. As is apparent from this report, in recent years, at any given year, the total number of graduate students (M.Sc., Ph.D., clinical residency) in the McGill Medical Physics Program ranges anywhere between 30 and 35 students. This excludes the students that are performing short (3-6 month) Medical Physics internships or projects in undergraduate programs or international students or fellows. McGill Medical Physics when measured on number of students, is one of the largest Medical Physics schools and the second largest radiation oncology medical physics school in North America and this attests to great success and perseverance and important role of the clinical faculty in the Unit.

In sharp contrast with this, the number of academic faculty committed by the University to the Medical Physics Unit through the department of Oncology used to be traditionally at 4 full-time university faculty in radiation oncology physics but has, until 2012, dwindled to two. We were fortunate to attract Dr. El Naqa from Washington University (St. Louis) who started his activities at the MPU in June 2010 thereby bringing the MPU faculty count in radiation therapy to two. In the summer of 2011, the dean of the Faculty of Medicine committed to the recruitment of two additional tenure track faculty, a process that is underway and one promising hire is currently being concluded and the new faculty member (Dr. Shirin Enger, Uppsala University) is expected to commence her activities in the Winter of 2014. The competition for the second position will be announced in the next few months.

The M.Sc. and Ph.D. programs have continued to improve thanks to an increased role of MUHC and JGH–based clinical faculty in the academic programs. Whereas the professional nature of part of the Medical physics profession requires the role of clinic-based teaching, a too large component of that also inevitably leads to a slow decline in the rigorous academic and research components of the programs. Academic faculty with vigorous research programs, are essential to keep the teaching programs to a standard required for McGill programs to maintain its CAMPEP accreditation. A potential for loss of CAMPEP accreditation of the Medical Physics programs is entirely preventable by the restoration of the two lost academic faculty positions in the Unit.

APPENDICES

APPENDIX I.

LIST OF FACULTY MEMBERS

MCGILL UNIVERSITY: MEDICAL PHYSICS UNIT

	FACULTY MEMBER	DIVISION	SALARY SUPPORT
1	**JAN SEUNTJENS**, Ph.D., FAAPM, FCCPM *Professor & Director, Medical Physics Unit* *Director, Department of Medical Physics, MUHC*	Clinical	U
2	**D. LOUIS COLLINS**, Ph.D. *Associate Professor, Dept Neurology & Neurosurgery*	Imaging	U
3	**STEPHEN D. DAVIS**, Ph.D. *Lecturer*	Clinical	U
4	**FRANÇOIS DEBLOIS**, Ph.D., FCCPM *Assistant Professor, Department of Oncology*	Clinical	HP
5	**SLOBODAN DEVIC**, Ph.D., FCCPM *Assistant Professor, Department of Oncology*	Clinical	HP
6	**ISSAM EL NAQA**, Ph.D. *Associate Professor, Department of Oncology*	Clinical	U
7	**MICHAEL D. C. EVANS**, M.Sc., FCCPM *Assistant Professor, Department of Oncology*	Clinical	HP
8	**ALAIN GAUVIN**, M.Sc., MCCPM, DABMP, DABR *Lecturer*	Imaging	HP
9	**GYORGY HEGYI**, Ph.D. *Lecturer*	Imaging	HP
10	**CHRISTIAN JANICKI**, Ph.D. *Lecturer*	Clinical	HP
11	**JOHN KILDEA**, Ph.D., MCCPM *Lecturer*	Clinical	HP
12	**PIERRE LÉGER**, B. Eng. *Chief Electronic Engineer, MUHC*	Clinical	HE
13	**SHIRLEY M. LEHNERT**, Ph.D. *Professor, Department of Oncology*	Clinical	U

MPU Faculty members (continued)

	FACULTY MEMBER	DIVISION	SALARY SUPPORT
14	**WILLIAM A. PARKER**, M.Sc., FCCPM *Assistant Professor, Department of Oncology;* *Clinical Chief, Department of Medical Physics /* *Director, Residency Training Program, MUHC*	Clinical	HP
15	**HORACIO J. PATROCINIO**, M.Sc., FCCPM, DABR *Assistant Professor, Department of Oncology*	Clinical	HP
16	**G. BRUCE PIKE**, Ph.D. *Professor, Department of Neurology & Neurosurgery*	Imaging	U
17	**ANDREW READER**, Ph.D. *Associate Professor, Brain Imaging Centre*	Imaging	U
18	**RICHARD B. RICHARDSON**, Ph.D. *Research Scientist, Internal Dosimetry Service*	Clinical	A
19	**RUSSELL RUO**, M.Sc., FCCPM, DABR *Lecturer*	Clinical	HP
20	**ARMAN SARFEHNIA**, Ph.D., MCCPM *Lecturer*	Clinical	HP
21	**EMILIE SOISSON**, Ph.D., MCCPM, DABR, CMD *Assistant Professor, Department of Oncology*	Clinical	HP
22	**GABRIELA STROIAN**, Ph.D. *Assistant Professor, Department of Oncology*	Clinical	HP
23	**ALASDAIR SYME**, Ph.D. *Assistant Professor, Department of Oncology*	Clinical	HP
24	**NADA TOMIC**, M.Sc., MCCPM *Lecturer, Medical Physics Unit*	Clinical	HP
25	**WIESLAW WIERZBICKI**, Ph.D., FCCPM *Chief Physicist, Department of Radiation Oncology,* *Hôpital Maisonneuve-Rosemont* *Lecturer, Medical Physics Unit*	Clinical	A

A	*Affiliated member*	(2)
HE	*Hospital engineering position*	(1)
HP	*Hospital clinical physics position*	(15)
U	*McGill University academic position*	(7)
		25

LIST OF STAFF MEMBERS

McGILL UNIVERSITY HEALTH CENTRE : DEPARTMENT OF MEDICAL PHYSICS

Director, Medical Physics Unit, McGill University ***Director, Medical Physics Department, MUHC***	Jan Seuntjens, *PhD, FCCPM, FAAPM*
Clinical Chief, Medical Physics Department, MUHC	William Parker, *MSc, FCCPM*
Administrative officer/Research Coordinator	Tatjana Nisic, *MA*
Administrative Coordinator	Margery Knewstubb

Medical Physicists	Stephen Davis, *PhD* Michael Evans, *MSc, FCCPM, Rad.Safety Officer, Class II, MUHC* Gyorgy Hegyi, *PhD* Maritza Hobson, *PhD, MCCPM, DABR* John Kildea, *PhD, MCCPM* Thalat Monajemi, *PhD, MCCPM* Horacio Patrocinio, *MSc, FCCPM, DABR* Emily Poon*, PhD, MCCPM* Marija Popovic, *PhD, FCCPM* Russell Ruo, *MSc, FCCPM* Arman Sarfehnia, *PhD, MCCPM* Monica Serban, *MSc, MCCPM* Emilie Soisson*, PhD, CMD, MCCPM, DABR* El-Naqa Issam, PhD *(Associate Professor)* Ervin B. Podgorsak, *PhD, FCCPM, DABMP, FAAPM, FACMP*
Dosimetrists	Irene Marie Bélanger, *RTT* Line Comeau, *RTT, CMD* Lioudmila Dychkant, *RTT* Chris Kaufmann, *RTT, CMD – Chief Dosimetrist* Francesco Paolino, *RTT, BS* Maria Papageorgiou, *RTT* Dinesh Parmar, *RTT* Cenzetta Procaccini, *RTT*

Chief electronic engineer	Pierre Léger, *BEng , Chief Engineer*
Electronic technicians	Bhavan Siva, *BEng* Joe Larkin
Information systems technician	Suzana Darvasi, *BSc*
Machine shop technician	TBA
Resident	Gregory Twork, *MSc*
Research Asssociate	Norma Ybarra, *PhD*

APPENDIX II.

M.Sc. DEGREES IN MEDICAL PHYSICS : January-December 2012

1. **BERMAN, Avery (G.B. Pike)**

   Development of a functional magnetic resonance imaging simulator: deterministic simulation of the transverse magnetization in microvasulature
   Currently: Ph.D. student, Biomedical Engineering, McGill University, Montreal, Québec

2. **LEDUC, Vincent (W. Wierzbicki)**

   Beam data acquisition with the IC Profiler: A feasibility study
   Currently: Clinical Physicist, Hôpital Maisonneuve-Rosemont, Montréal, Québec

3. **LETOURNEAU, Étienne (A. Reader)**

   Impact of algorithm, iterations, post-smoothing, count-level and tracer distribution on single-frame PET quantification using a generalized image space reconstruction algorithm
   Currently: Physicist, CSSSL, Laval, Québec

4. **MILROY, Desmond (F. DeBlois)**

   Validation of a commercial Monte Carlo algorithm for stereotactic radiosurgery and stereotactic body radiation therapy
   Currently: Medicine, McGill University, Montreal, Québec

5. **RENAUD, James (A. Sarfehnia)**

   Development of a graphite probe calorimeter for absolute clinical dosimetry: Numerical design optimization, prototyping and experimental proof-of-concept
   Currently: Ph.D. student, Medical Physics Unit, McGill University, Montreal, Québec

6. **SINGH, Khuahdeep (S. Devic)**

   Modeling secondary cancer risk following paediatric radiotherapy: A comparison of intensity modulated proton therapy and photon therapy
   Currently: Physicist, McGill University Health Centre, Montreal, Québec

7. **THAKUR, Varun (S. Devic)**

   Planning and delivery comparison of six Linac-based stereotactic radiosurgery techniques
   Currently: Physicist, Hôpital Nôtre-Dame, Montreal, Québec

8. **TOLTZ, Allison (W. Parker, J. Seuntjens)**

   Prediction of risks of cardiac mortality and secondary cancers after thoracic radiotherapy in adolescents and young adults
   Currently: Ph.D. student, Medical Physics Unit, McGill University, Montreal, Québec

Ph.D. DEGREES IN MEDICAL PHYSICS : January-December 2012

(*major department and supervisors are indicated in parentheses*)

1. **ALEXANDER, Andrew** (Physics – *J. Seuntjens*)
   Monte Carlo treatment planning with modulated electron radiotherapy: Framework development and application
   Currently employed: Resident, Ottawa Hospital Cancer Centre, Ottawa, Ontario

APPENDIX III.

BASIC DEMOGRAPHIC DATA

for the 206 M.Sc. and 31 Ph.D. GRADUATES

of the MEDICAL PHYSICS PROGRAMS

at McGILL UNIVERSITY

M.Sc. GRADUATES IN MEDICAL PHYSICS : 206

1980 – February 2013

MEDICAL PHYSICS UNIT : McGILL UNIVERSITY

Total number of M.Sc. graduates in medical physics:		**206**
Graduates' origin:	Quebec	69/206
	another Canadian province	61/206
	USA	13/206
	another country	63/206
Working in medical physics:		**181/196**
	in Quebec	75/181
	in another Canadian province	48/181
	in the USA	41/181
	in another country	17/181
Currently Ph.D. student:		15/206
Origin of M.Sc. graduates currently working in Quebec:		**75/206**
	Quebec	39/75
	another Canadian province	12/75
	USA	1/75
	another country	23/75
M.Sc. graduates of Quebec origin:		**69/206**
	working in medical physics	59/69
	in Quebec	39/69
	in another Canadian province	8/69
	in the USA	11/69
	in another country	2/69
Currently Ph.D. student:		2/69

Ph.D. GRADUATES IN MEDICAL PHYSICS : 31

1983 – March 2013

MEDICAL PHYSICS UNIT : McGILL UNIVERSITY

Total number of Ph.D. graduates in medical physics:		**31**
Graduates' origin:	Quebec	9/31
	another Canadian province	12/31
	USA	0/31
	another country	10/31
Working in medical physics:		**30/31**
	in Quebec	10/30
	in another Canadian province	8/30
	in the USA	10/30
	in another country	2/30
Origin of Ph.D. graduates currently working in Quebec:		**10/31**
	Quebec	5/10
	another Canadian province	2/10
	USA	0/10
	another country	3/10
Ph.D. graduates of Quebec origin:		**9/31**
	working in medical physics	9/31
	in Quebec	5/9
	in another Canadian province	1/9
	in the USA	3/9
	in another country	0/9

Graduates of the Accredited Two-year Residency Training Program in Radiation Oncology Physics at McGill

No.	Name	Date of grad	Background at entry	Current position	Current address
1	Belal Moftah, Ph.D.	Dec '99	Ph.D. (high energy physics) U. British Columbia	Chief physicist	Dept of Biomedical Physics, King Faisal Specialist Hospital & Research Centre, Jeddah, Saudi Arabia
2	Lara Dyke, Ph.D.	May '00	M.Sc. (medical physics) U. Alberta	Clinical medical physicist	Varian Medical Systems, Miami, Florida, USA
3	Tony Falco, Ph.D.	Dec '00	Ph.D. (medical physics) McGill U	Clinical medical physicist	Resonant Medical, Incorporated Montreal, Quebec
4	Slobodan Devic, Ph.D.	Mar '02	Post-graduate training Washington U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
5	Kavita Murthy, M.Sc.	May '02	M.Sc. (medical physics) McGill U	Clinical medical physicist	Canadian Nuclear Safety Commission Ottawa, Ontario
6	Jennifer Barker, M.Sc.	Dec '02	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
7	François DeBlois, Ph.D.	Jul '03	Ph.D. (medical physics) McGill U.	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
8	Siobhan Ozard, Ph.D.	Nov '03	Ph.D. (medical physics) U. British Columbia	Clinical medical physicist	Dept of Medical Physics, Windsor Regional Cancer Centre Windsor, Ontario
9	Wamied Abdel-Rahman, Ph.D.	Dec '05	Ph.D. (medical physics) McGill U.	Clinical medical physicist	Dept of Radiation Oncology, King Faisal Specialist Hospital, Damman, Saudi Arabia
10	Yizhen Wang, M.Sc.	May '06	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Credit Valley Hospital, Mississauga, Ontario
11	Li Heng Liang, M.Sc.	Aug '06	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
12	Nada Tomic, M.Sc.	Aug '06	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
13	Gabriela Stroian, Ph.D.	Aug '07	Ph.D. (theoretical physics) U Paul Sabatier, France	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
14	Eric Reynard, M.Sc.	Mar '09	M.Sc. (medical physics) McGill U	Clinical medical physicist	PEI Cancer Treatment Centre, Queen Elizabeth Hospital, Charlottetown, Prince Edward Island
15	Kristin Marchant, Ph.D.	Mar '09	Ph.D. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Allan Blair Cancer Centre, Regina, Saskatchewan
16	Krum Asiev, M.Sc.	Jun '09	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
17	Ismail Aldahlawi, M.Sc.	Jun '10	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, King Faisal Specialist Hospital, Damman, Saudi Arabia
18	Emily Poon, Ph.D.	May '11	Ph.D. (medical physics) McGill U	Clinical medical physicist	Dept of Medical Physics, McGill University Health Centre Montreal, Quebec
19	Jonathan Thébaut, M.Sc.	May '11	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
20	Arman Sarfehnia, Ph.D.	Feb '12	Ph.D. (medical physics) U Western Ontario	Clinical medical physicist	Dept of Medical Physics, McGill University Health Centre Montreal, Quebec
21	John Kildea, Ph.D.	Jun '12	Postdoc (astrophysics) Harvard U	Clinical medical physicist	Dept of Medical Physics, McGill University Health Centre Montreal, Quebec
22	Stephen Davis, Ph.D.	Aug '12	Ph.D. (medical physics) U Wisconsin	Clinical medical physicist	Dept of Medical Physics, McGill University Health Centre Montreal, Quebec
23	Joseph Holmes, M.Sc.	Aug '12	M.Sc. (medical physics) McGill U	Clinical medical physicist	Kootenai Medical Centre, Coeur d'Alene, Idaho

Currently registered residents:

24	Ellis Mitrou, M.Sc.	Aug '13	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
25	Marc Morcos, M.Sc.	Aug '13	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
26	Greg Twork, M.Sc.	Aug '13	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Medical Physics, McGill University Health Centre Montreal, Quebec
27	Hamed Bekerat, M.Sc.	Aug '14	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
28	Amanda Dyess, M.Sc.	Aug '14	M.Sc. (medical physics) McGill U	Clinical medical physicist	St Peter's Hospital, Albany, New York
29	Naomi Shin, M.Sc.	Aug '14	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Medical Physics, McGill University Health Centre Montreal, Quebec

APPENDIX V.

COURSE INSTRUCTORS : CALENDAR YEAR 2012

MEDICAL PHYSICS UNIT : McGILL UNIVERSITY

Course #	Course Title	Instructor(s)
Winter semester 2012		
MDPH 602	*Applied Dosimetry*	**E.B. Podgorsak**
MDPH 603	*Laboratory in Radiation Physics*	**J. Seuntjens**
MDPH 607	*Physics of Medical Imaging* *	**A. Reader, G.B. Pike**
MDPH 608	*Lab in Diag. Radiol. & Nucl. Med.*	**G. Hegyi, G. Stroian**
MDPH 609	*Radiation Biology*	**S. Lehnert**
MDPH 612	*Computers in Medical Imaging*	**H.J. Patrocinio, F. DeBlois**
MDPH 616D (Part II)	*Selected Topics in Medical Physics*	**E. Soisson, W. Parker**
563-625 D	*Thesis Research*	**(*individual supervisors*)**
Fall semester 2012		
MDPH 601	*Radiation Physics* *	**J. Seuntjens**
MDPH 611	*Medical Electronics*	**P. Léger**
MDPH 613	*Health Physics*	**J. Kildea**
MDPH 614	*Physics of Diagnostic Radiology* *	**I. El Naqa**
MDPH 615	*Physics of Nuclear Medicine* *	**S. Devic**
MDPH 616D (Part I)	*Selected Topics in Medical Physics*	**E. Soisson, W. Parker**

* designates core courses

APPENDIX VI.

McGill University – Medical Physics Unit

Teaching Evaluation Summary - Winter 2012

Question	#1	#2	#3	#4	#5	#6	#7	**TOTAL**	**AVG**
A. Course material & presentation									
1. Individual classes are well organized.	4.4	4.5	4.8	3.9	4.8	4.9	5.0	**32.26**	**4.6**
2. The instructor develops subject matter in a logical manner.	4.2	4.8	4.4	3.9	4.8	4.7	4.8	**31.53**	**4.5**
3. The instructor makes the material clear and interesting.	4.6	4.8	4.0	3.9	4.9	4.7	4.8	**31.57**	**4.5**
4. The instructor encourages and stimulates student thinking.	4.8	4.8	4.0	4.0	4.8	4.6	4.8	**31.67**	**4.5**
5. The instructor incorporates up-to-date information in the course.	4.9	4.8	4.5	4.7	4.9	4.8	4.9	**33.42**	**4.8**
6. The pace of the course is satisfactory.	4.4	4.8	4.5	4.2	4.8	4.7	4.6	**31.96**	**4.6**
7. The instructor speaks clearly.	4.8	4.6	4.5	4.1	4.9	4.8	4.8	**32.44**	**4.6**
8. The instructor makes good use of the blackboard or audiovisual aids.	4.9	4.8	4.2	4.6	4.9	4.9	4.8	**32.98**	**4.7**
B. Interaction with instructor									
9. The instructor welcomes questions in class.	4.6	4.9	4.6	4.5	4.9	4.9	4.9	**33.20**	**4.7**
10. The instructor is available for consultation outside classes.	4.8	4.9	4.5	4.2	4.8	4.9	4.7	**32.72**	**4.7**
11. Consultation with the instructor is helpful.	4.9	4.7	4.3	4.3	4.9	4.8	4.9	**32.82**	**4.7**
C. Assignments and examinations									
12. The mid-term exam questions are fair.		4.8	4.5		4.9	4.6	4.8	**23.54**	**4.7**
13. The mid-term exam marking and grading are fair.		4.8	4.5		4.9	4.6	4.8	**23.45**	**4.7**
14. Assignments contribute substantially to students' understanding of course material.	4.9	4.8	4.6	4.1	4.8	4.4	5.0	**32.45**	**4.6**
15. Assignments returned sufficiently promptly for students to benefit from corrections.	4.3	5.0	4.7	4.2	4.9	5.0	5.0	**33.11**	**4.7**
D. Overall assessment									
16. You would like to take another course from the same instructor.	4.7	4.6	4.3	4.0	4.9	4.5	4.8	**31.70**	**4.5**
17. The instructor's overall teaching ability is excellent.	4.8	4.8	4.1	3.8	4.8	4.8	4.9	**31.95**	**4.6**
Overall average course rating for instructor.	4.65	4.75	4.41	4.16	4.84	4.75	4.81		

Overall Average/5 4.63

McGill University - Medical Physics Unit
Teaching Evaluation Summary - Summer 2012

Question	#1	#2	#3	#4	TOTAL	AVG
A. Course material and presentation						
1. Individual classes are well organized.	4	5	3	5	**17**	**4.3**
2. The instructor develops subject matter in a logical manner.	4	4	3	4	**15**	**3.8**
3. The instructor makes the material clear and interesting.	4	4	3	4	**15**	**3.8**
4. The instructor encourages and stimulates student thinking.	5	5	3	5	**18**	**4.5**
5. The instructor incorporates up-to-date information in the course.	5	5	5	5	**20**	**5.0**
6. The pace of the course is satisfactory.	5	5	4	4	**18**	**4.5**
7. The instructor speaks clearly.	4	4	3	4	**15**	**3.8**
8. The instructor makes good use of the blackboard or audiovisual aids.	4		3	5	**12**	**4.0**
B. Interaction with instructor						
9. The instructor welcomes questions in class.	5	5	5	5	**20**	**5.0**
10. The instructor is available for consultation outside classes.	5	5	5		**15**	**5.0**
11. Consultation with the instructor is helpful.	5	5	5		**15**	**5.0**
C. Assignments and examinations						
12. The mid-term exam questions are fair.						
13. The mid-term exam marking and grading are fair.						
14. Assignments contribute substantially to students' understanding of course material.	4	4	3	3	**14**	**3.5**
15. Assignments returned sufficiently promptly for students to benefit from corrections.	4	4	3	4	**15**	**3.8**
D. Overall assessment						
16. You would like to take another course from the same instructor.	5	5			**10**	**5.0**
17. The instructor's overall teaching ability is excellent.	5	5	3		**13**	**4.3**
Average per respondant	4.53	4.64	3.64	4.36		

Overall Average/5	***4.34***

McGill University – Medical Physics Unit
Teaching Evaluation Summary – Fall 2012

Question	#1	#2	#3	#4	#5	**TOTAL**	**AVG**
A. Course material and presentation							
1. Individual classes are well organized.	4.8	4.5	5.0	5.0	4.3	**23.62**	**4.7**
2. The instructor develops subject matter in a logical manner.	4.7	4.3	5.0	5.0	4.3	**23.29**	**4.7**
3. The instructor makes the material clear and interesting.	4.8	4.0	4.7	4.6	4.1	**22.24**	**4.4**
4. The instructor encourages and stimulates student thinking.	4.8	4.5	4.8	4.6	4.7	**23.48**	**4.7**
5. The instructor incorporates up-to-date information in the course.	4.8	4.8	4.7	5.0	4.4	**23.76**	**4.8**
6. The pace of the course is satisfactory.	4.7	4.3	5.0	5.0	3.6	**22.57**	**4.5**
7. The instructor speaks clearly.	4.7	4.0	4.8	4.6	4.4	**22.53**	**4.5**
8. The instructor makes good use of the blackboard or audiovisual aids.	4.7	4.0	4.8	4.8	4.4	**22.73**	**4.5**
B. Interaction with instructor							
9. The instructor welcomes questions in class.	4.8	4.8	5.0	5.0	4.9	**24.52**	**4.9**
10. The instructor is available for consultation outside classes.	5.0	4.8	5.0	5.0	4.9	**24.69**	**4.9**
11. Consultation with the instructor is helpful.	4.8	4.8	5.0	5.0	4.9	**24.49**	**4.9**
C. Assignments and examinations							
12. The mid-term exam questions are fair.	5.0	3.8	4.8	5.0	4.0	**22.67**	**4.5**
13. The mid-term exam marking and grading are fair.	4.8	4.2	4.8	4.8	3.7	**22.35**	**4.5**
14. Assignments contribute substantially to students' understanding of course material.	4.3	4.0	5.0	5.0	4.4	**22.76**	**4.6**
15. Assignments returned sufficiently promptly for students to benefit from corrections.	5.0	4.6	5.0	5.0	4.6	**24.17**	**4.8**
D. Overall assessment							
16. You would like to take another course from the same instructor.	4.7	4.5	5.0	4.8	4.3	**23.25**	**4.7**
17. The instructor's overall teaching ability is excellent.	5.0	4.3	5.0	4.8	4.4	**23.56**	**4.7**
Overall average course rating for instructor.	4.79	4.38	4.91	4.88	4.37		

Overall Average/5	***4.67***

APPENDIX VII.

STUDENTS BEGINNING THEIR FIRST YEAR OF M.Sc. STUDIES IN MEDICAL PHYSICS IN SEPTEMBER 2012

(*major department and supervisor are indicated in parentheses; number following the major department indicates year of M.Sc. study in Fall 2012*)

1. **DESROCHES, Joannie** (MPU-1, *J. Seuntjens*)
   (title of thesis not yet available)
2. **GUILLET, Dominique** (MPU-1, *F. DeBlois*)
   (title of thesis not yet available)
3. **HICKLING, Susannah** (MPU-1, *I. El Naqa*)
   (title of thesis not yet available)
4. **MAGLIERI, Robert** (MPU-1, *J. Kildea*)
   (title of thesis not yet available)
5. **NOVOSAD, Philip** (MPU-1, *A. Reader*)
   (title of thesis not yet available)
6. **QUINTERO MATEUS, Chrystian** (MPU-1, *N. Tomic, J. Seuntjens, S. Devic*)
   (title of thesis not yet available)

These students started their studies in September 2012, selected their supervisor(s) in May 2013, and are starting their M.Sc. thesis research work in Summer 2013.

STUDENTS BEGINNING THEIR SECOND YEAR OF M.Sc. STUDIES IN MEDICAL PHYSICS IN SEPTEMBER 2012

(*major departments and supervisors are indicated in parentheses; number following the major department indicates year of M.Sc. study in Fall 2012*)

1. **ALDOSARY, Ghada** (MPU-2, *A. Sarfehnia*)
   The measurement of the linear energy transfer of various radiotherapeutic beams in the clinic: A feasibility study
2. **ASGHARIZADEH, Saeid** (MPU-2, *A. Syme*)
   Patient-specific quality assurance for emdorectal brachytherapy
3. **BOURQUE, Alexandra** (MPU-2, *H. Bouchard, J-F. Carrier, J. Seuntjens*)
   A stoichiometric calibration method for dual energy computed tomography
4. **FAN, Michael** (MPU-2, *G. Stroian, F. DeBlois*)
   Web application in radiotherapy: The standardization of treatment planning and development of quantitative plan metrics
5. **GERARD, Ian** (MPU-2, *L. Collins*)
   An analysis of tracking error in image guided neurosurgery
6. **GHOLAMPOURKASHI, Sara** (MPU-2, *F. DeBlois*)
   Web-based system for quality assurance of radiation oncology equipment and procedures
7. **MULLINS, Joel** (MPU-2, *A. Syme*)
   Preliminary measurements towards virtual isocenter RapidArc
8. **RENAUD, Marc-André** (MPU-2, *J. Seuntjens*)
   Pre-calculated track Monte Carlo dose calculation engine
9. **ZLATEVA, Yana** (MPU-2, *I. El Naqa*)
   Investigation of Cherenkov emission with applications in dosimetry, image guidance and intensity modulation in radiation therapy

These students began their M.Sc. studies in September 2011, completed the Fall and Winter didactic semesters of the 2011-2012 academic year, and are currently completing their M.Sc. thesis research. All are expected to submit their theses by Fall 2013.

STUDENTS COMPLETING THESIS REQUIREMENTS :

M.Sc. STUDIES IN MEDICAL PHYSICS IN FALL 2012

(*major departments and supervisors are indicated in parentheses; number following the major department indicates year of M.Sc. study in Fall 2012*)

1. **ARCHAMBAULT, Laurie** (MPU-3, *W. Wierzbicki)*

   Validation of XiO's electron Monte Carlo module in heterogeneous phantoms

2. **BEKERAT, Hamed** (MPU-3, *S. Devic, A. Sarfehnia)*

   Improving the energy response of external beam therapy (EBT) GAFCHROMIC dosimetry films at low energies (s100keV)

3. **CARRIER-VALLIÈRES, Martin** (MPU-3, *I. El Naqa)*

   Outcome prediction of sarcoma tumors using PET/MR imaging

4. **DYESS, Amanda** (MPU-3, *W. Parker)*

   Patient dose verification for image-guided radiation therapy using a deformable registration tool

5. **KHATCHADOURIAN, Rafael** (MPU-3, *J. Kildea, M.D.C. Evans)*

   Monte Carlo simulations and physical measurements of neutron equivalent dose in the maze area of linac bunkers

6. **WATSON, Peter** (MPU-3, *J. Seuntjens)*

   Fast Monte Carlo scatter correction in cone-beam computed tomography

These students began their M.Sc. studies in September 2010, completed the Fall and Winter didactic semesters of the 2010-2011 academic year, and are currently completing their M.Sc. thesis requirements. All submitted their final theses by December 2012.

APPENDIX VIII.

STUDENTS CURRENTLY WORKING ON Ph.D. PROJECTS IN MEDICAL PHYSICS IN SEPTEMBER 2012

(*major department and supervisors are indicated in parentheses*)

1. **ALONSO ORTIZ, Eva** (Physics – *G.B. Pike*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2011)

2. **CHUNG, Eunah** (Physics – *J. Seuntjens*)
   Dosimetry and non-compliant beams
   Thesis submitted: PhD oral defense scheduled for March 2013

3. **CARRIER-VALLIÈRES, Martin** (Physics – *I. El Naqa*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2012)

4. **CONNELL, Tanner** (Physics – *J. Seuntjens)*
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2009)

5. **LEE, Sangkyu** (Physics – *I. El Naqa, J. Seuntjens*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2010)

6. **MARKEL, Daniel** (Physics – *I. El Naqa, J. Seuntjens*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2011)

7. **PAPACONSTADOPOULOS, Pavlos** (Physics – *J. Seuntjens*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2011)

8. **PATER, Piotr** (Physics – *I. El Naqa, J. Seuntjens*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2011)

9. **PEREZ, Jessica** (Biomedical Engineering – *I. El Naqa*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in January 2012)

0. **RENAUD, James** (Physics – *A. Sarfehnia, J. Seuntjens*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2012)

11. **TOLTZ, Allison** (Physics – *J. Seuntjens*)
    (title not yet available)
    Expected to submit thesis: date not yet available (began Ph.D. studies in September 2012)

12. **WATSON, Peter** (Physics – *J. Seuntjens*)
    (title not yet available)
    Expected to submit thesis: date not yet available (began Ph.D. studies in January 2013)

APPENDIX IX.

PUBLICATIONS

by members of the Medical Physics Unit : 2012 calendar year (x 70)
(*names of MPU staff members are underlined, students are indicated by* †)

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1. M. Heravi, N. Tomic, L. Liang, S. Devic, J. Holmes†, F. DeBlois, D. Radziocha, T. Muanza, *Sorafenib in combination with ionizing radiation has a greater anti-tumor activity in a breast cancer model*, Anti-Cancer Drugs **23**, 525-533 (2012).
2. C. Till, C. Ho, A. Dudani, D. Garcia-Lorenzo, D.L. Collins, B.L. Banwell, *Magnetic resonance imaging predictors of executive functioning in patients with pediatric-onset multiple sclerosis*, Arch. Clin. Neuropsychol. **27**(5), 495-509 (2012).
3. H.E. Hulshoff Pol, G.C. van Baal, H.G. Schnack, R.G. Brans, A.C. van der Schot, R.M. Brower, N.E. van Haren, C. Lepage, D.L. Collins, A.C. Evans, D.I. Boomsma, W. Nolen, R.S. Khan, *Overlapping and segregating structural brain abnormalities in twins with schizophrenia or bipolar disorder*, Arch. Gen. Psychiatry **69**(4), 349-359 (2012).
4. T. Sprenger, C.L. Seifert, M. Valet, A.P. Andreou, A. Foerschler, C. Zimmer, D.L. Collins, P.J. Goadsby, T.R. Tölle, M.M. Chakravarty, *Assessing the risk of central post-stroke pain of thalamic origin by lesion mapping*, Brain **135**(8), 2536-2545 (2012).
5. E. Klepousniotou, G.B. Pike, K. Steinhauer, V. Gracco, *Not all ambiguous words are created equal: An EEG investigation of homonymy and polysemy*, Brain & Lang. **123**(1), 11-21 (2012) [Epub ahead of print].
6. C.I. Mark, G.B. Pike, *Indication of BOLD-specific venous flow-volume changes from precisely controlled hyperoxic vs. hypercapnic calibration*, J. Cereb. Blood Flow & Metab. **32**(4), 709-719 (2012).
7. B.A. Radlinska, Y. Blunk, I.R. Leppert, J. Minuk, G.B. Pike, A Thiel, *Changes in callosal motor fiber integrity after subcortical stroke of the pyramidal tract*, J. Cereb. Blood Flow & Metab. **32**(8), 1515-1524 (2012).
8. L. Mercier, V.S. Fonov, C. Haegelen, R.F. Del Maestro, K. Petrecca, D.L. Collins, *Comparing two approaches to rigid registration of three-dimensional ultrasound and magnetic resonance images for neurosurgery*, Int. J. Comput. Assist. Radiol. Surg. **7**(1), 125-136 (2012).
9. C.X. Yan, B. Goulet, S.J. Chen, D. Tampieri, D.L. Collins, *Validation of automated ultrasound-CT registration of vertebrae*, Int. J. Comput. Assist. Radiol. Surg. **7**(4), 601-610 (2012).
10. S.J. Chen, I. Reinertsen, P. Coupé, C.X. Yan, L. Mercier, D.R. Del Maestro, D.L. Collins, *Validation of a hybrid Doppler ultrasound vessel-based registration algorithm for neurosurgery*, Int. J. Comput. Assist. Radiol. Surg. **7**(5), 667-685 (2012).
11. C. Haegelen, P. Coupé, V.S. Fonov, N. Guizard, P. Jannin, X. Morandi, D.L. Collins, *Automated segmentation of basal ganglia and deep brain structures in MRI of Parkinson's disease*, Int. J. Comput. Assist. Radiol. Surg. (2012).
12. S. Bériault, F.A. Subaie, D.L. Collins, A.F. Sadikot, G.B. Pike, *A multimodal approach to computer-assisted deep brain stimulation trajectory planning*, Int. J. Comput. Assist. Radiol. Surg. **7**(5), 687-704 (2012).
13. C.X. Yan, B. Goulet, D. Tampieri, D.L. Collins, *Ultrasound-CT registration of vertebrae without reconstruction*, Int. J. Comput. Assist. Radiol. Surg. **7**(6), 901-909 (2012).
14. S. Bériault, F. Al Subaie, D.L. Collins, A.F. Sadikot, G.B. Pike, *A multi-modal approach to computer-assisted deep brain stimulation trajectory planning*, Int. J. Comp. Assist. Radiol. Surg. **7**, 687-704 (2012).
15. E.A. Kidd, I. El Naqa, B.A. Siegel, F. Dehdashti, P.W. Grigsby, *FDG-PET-based prognostic nomograms for locally advanced cervical cancer*, Gynecol. Oncol. **127**(1), 136-140 (2012).PMID: 22735785.
16. N. Etchamendy, K. Konishi, G.B. Pike, A. Marighetto, B.D. Bohbot, *Evidence for a virtual human analog of a rodent relational memory task: A study of aging and fMRI in young adults*, Hippocampus **22**(4), 869-880 (2012).

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18. Y. Xiao, S. Bériault, G.B. Pike, D.L. Collins, *Multicontrast multiecho FLASH MRI for targeting the subthalamic nucleus*, Magn. Reson. Imag. **30**(5), 627-640 (2012).
19. L. Rittner, J.S.W. Campbell, P.F. Freitas, S. Appenzeller, G.B. Pike, R.A. Lotufo, *Analysis of scalar maps for the segmentation of the corpus callosum in diffusion tensor fields*, J. Math. Imag. Vision (Sep 2012) [Epub ahead of print]. DOI 10.1007/s10851-012-0377-4.
20. M.C. Bloemers, L. Portelance, R. Ruo, W. Parker, L. Souhami, *A dosimetric evaluation of dose escalation for the radical treatment of locally advanced vulvar cancer by intensity-modulated radiation therapy,* Med Dosim. 2012 Feb 6. [Epub ahead of print]. http://www.ncbi.nlm.nih.gov/pubmed/22317848 .
21. P. Coupé, A. Buades, D.L. Collins, M. Robles, *New methods for MRI denoising based on sparseness and self-similarity*, Med. Image Anal. **16**(1), 18-27 (2012).
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23. E. Chung†, E.T. Soisson, J. Seuntjens, *Dose homogeneity specification for reference dosimetry of nonstandard fields,* Med. Phys. **39**(1), 407-418 (2012).
24. http://online.medphys.org/resource/1/mphya6/v39/i1/p407_s1
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27. A.B. Paxton, S.D. Davis, L.A. DeWerd, *Determining the effects of microsphere and surrounding material composition on ^{90}Y dose kernels using EGSnrc and MCNP5*, Med. Phys. **39**, 1424-1434 (2012).
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32. D. Fontanarosa, S. van der Meer, E. Bloemen, G. Stroian, F. Verhaegen, *Magnitude of speed of sound aberration corrections for ultrasound image guided radiotherapy for prostate and other anatomical sites*, Med. Phys. **39**, 5286-5292 (2012).
33. S. Ahmad, S. Devic, *PET-based GTV definition is the future of radiotherapy treatment planning*, Med. Phys. **39**, 5791-5794 (2012).
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36. S. Devic, *Response to: Comments on 'Linearization of dose-response curve of the radiochromic film dosimetry system'* [Med. Phys. 39(8). 4850-4857 2012)], Med. Phys. **39**, 7173-7174 (2012).
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39. S.F. Eskildsen, P. Coupé, V.S. Fonov, J.V. Manjon, K.K. Leung, N. Guizard, S.N. Wassef, L.R. Ostergaard, D.L. Collins, *BEaST: Brain extraction based on nonlocal segmentation technique: Alzheimer's disease neuroimaging initiative*, Neuroimage **59**(3), 2363-2373 (2012).

40. P. Coupé, S.F. Eskildsen, J.V. Manjon, V.S. Fonov, D.L. Collins, *Alzheimer's disease neuroimaging initiative – Simultaneous segmentation and grading of anatomical structures for patient's classification: Application to Alzheimer's disease*, Neuroimage **59**(4), 3736-3747 (2012).
41. van Soelen, R. Brouwer, C. van Baal, H. Schnack, J. Peper, D.L. Collins, A.C. Evans, R. Khan, D. Boomsma, H.E. Hulshoff Pol, *Genetic influences on thinning of the cerebral cortex during development*, Neuroimage **59**(4), 3871-3880 (2012).
42. M.E. Sutherland, R.J. Zatorre, K.E. Watkins, P-Y. Herve, G. Leonard, G.B. Pike, C. Witton, T. Paus, *Anatomical correlates of dynamic auditory processing: Relationship to literacy during early adolescence*, Neuroimage **60**(2), 1287-1295 (2012).
43. A.C. Evans, A.L. Janke, D.L. Collins, S. Baillet, *Brain templates and atlases*, Neuroimage **62**(2), 911-922 (2012).
44. G.B. Pike, *Quantitative functional MRI: Concepts, issues and future challenges*, Neuroimage **62**(2), 1234-1240 (2012).
45. P. Coupé, S.F. Eskildesen, J.V. Manjon, V.S. Fonov, J.C. Pruessner, M. Allard, D.L. Collins, *Scoring by nonlocal image patch estimator for early detection of Alzheimer's disease*, Neuroimage: Clinical **1**(1), 141-152 (2012).
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47. A. Fuentes, D.L. Collins, D. Garcia-Lorenzo, J.G. Sled, S. Narayanan, D.L. Arnold, B.L. Banwell, C. Till, *Memory performance and normalized regional brain volumes in patients with pediatric-onset multiple sclerosis*, J. Int. Neuropsychol. Soc. **18**(3), 471-480 (2012).
48. H. Zaidi, C.L. Fuentes, I. El Naqa, *Comparative methods for PET image segmentation in pharyngolaryngeal squamous cell carcinoma,* Eur. J. Nucl. Med. Mol. Imag. **39**(5), 881-891 (2012).
49. A. Gao, J. Seuntjens, G.N.Kaufman, N. Tran-Khan, A. Butler, A. Li, H. Wang, M.D. Buschmann, E.J. Harvey, J.E. Henderson, *Mesenchymal mesenchymal stem cell transplantation to promote bone healing*, J. Ortho. Res. **30**(8), 1183-1189 (2012). doi: 10.1002/jor.22028. [Online published: January 2012].
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52. S. Lee†, G. Stroian, N. Kopek, M. AlBahhar, J. Seuntjens, I. El Naqa, *Analytical modelling of regional radiotherapy dose response of lung*, Phys. Med. Biol. **57**(11), 3309-3321 (2012).
53. J. Seuntjens, L. Beaulieu, I. El Naqa, P. Despres, *Editorial: Special section: Selected papers from the Fourth International Workshop on Recent Advances in Monte Carlo Techniques for Radiation Therapy*, Phys. Med. Biol. **57**(11), 4 pages (2012).
54. E. Eldebawy, W. Parker, W. Abdel Rahman, C.R. Freeman, *A dosimetric evaluation of dose escalation for the radical treatment of locally advanced vulvar cancer by intensity-modulated radiation therapy,* Int. J. Radiat. Oncol. Biol. Phys. **82**(3), e501-505 (2012). http://www.ncbi.nlm.nih.gov/pubmed/22197231 .
55. Z. Yegingil, L.A. DeWerd, S.D. Davis, C. Hammer, K. Kunugi, *Photon beam audits for radiation therapy clinics: A pilot mailed dosemeter study in Turkey*, Radiat. Prot. Dosim. **148**, 249-257 (2012).
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57. K.M. Creach, I. El Naqa, J.D. Bradley, J.R. Olsen, P.J. Parikh, R.E. Dryzmala, C. Bloch, C.G. Robinson, *Dosimetric predictors of chest wall pain after lung stereotactic body radiotherapy,* Radioth. Oncol. **104**(1), 23-27 (2012).
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62. A. DeNigris, D.L. Collins T. Arbel, *Multi-model image registration based on gradient orientations of minimal uncertainty*, IEEE Trans. Med. Imag. **31**(12), 2343-2354 (2012).
63. M. Kersten-Oertel, P. Jannin, D.L. Collins, *DVV: A taxonomy for mixed reality visualization in image guided surgery*, IEEE Trans. Vis. Comput. Graph. **18**(2), 332-352 (2012).
64. El Naqa, *Machine learning methods for predicting tumour response in lung cancer*, WIRES: Datamining & Knowledge Discovery **2**(2), 99-192 (2012).
65. E. Conneely, A. Alexander, G. Stroian, J. Seuntjens, *An investigation into the use of MMCTP to tune accelerator source parameters and testing its clinical application*, J. Appl. Clin. Med. Phys., in press, 2012.
66. M.E. Johnson, C.G. Pereira, I. El Naqa, S.M. Goddu, R. Al-Lozi, A. Apte, D.B. Mansur, *Determination of planning target volume for whole stomach irradiation using daily megavoltage CT images,* Practical Radiation Oncology, in press, 2012.
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70. H. Bouchard, J. Seuntjens, *Applications of Monte Carlo to radiation dosimetry,* in "Monte Carlo Techniques in Radiation Therapy", J. Seco & F. Verhaegen eds, Ch.4, Taylor & Francis Books, Inc, pp. 43-64 (2012).
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APPENDIX X.

PUBLISHED ABSTRACTS

by members of the Medical Physics Unit : 2012 calendar year (x 69)
(names of MPU staff members are underlined, students are indicated by †)

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1. M. Carrier-Vallières†, C.R. Freeman, S.R. Skamene, I. El Naqa, *Prediction of tumor outcomes through wavelet image fusion and texture analysis of PET/MR imaging,* Med Phys. **39**(6), 3615 (2012). SU-D-BRB-03.
2. P. Watson†, E. Mainegra-Hing, E.T. Soisson, I. El Naqa, J. Seuntjens, *Implementation of a fast Monte Carlo scatter correction for cone-beam computed tomography,* Med. Phys. **39**(6), 3625 (2012). SU-E-I-04.
3. D. Markel†, I. El Naqa, C.R. Freeman, M. Carrier-Vallières†, *Novel level set active contour algorithm for multimodality joint segmentation/registration using the Jensen-Rényi divergence,* Med Phys. **39**(6), 3678 (2012). SU-E-J-110
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12. E. Chung†, S. Davis, J. Seuntjens, *Ion recombination in a liquid-filled ionization chamber in high-energy photon,* Med. Phys. **39**(6), 3887 (2012). TU-A-BRB-09
13. P. Papaconstadopoulos†, J. Seuntjens, *Fast and accurate hybrid source model for modulated electron radiotherapy,* Med. Phys. **39**(6), 3944 (2012). WE-C-BRB-04.
14. D. Markel†, I. El Naqa, *A novel level set active contour algorithm using the Jensen-Rényi divergence for tumor segmentation in PET,* Med Phys. **39**(6), 3961 (2012). WE-E-213CD-08.
15. S. Lee†, J. Bradley, N. Ybarra, K. Jeyaseelan, J. Seuntjens, I. El Naqa, *Bayesian network framework for biophysical radiation pneumonitis modeling,* Med. Phys. **39**(6), 3993-3994 (2012). TH-C-213AB-03.
16. A. Toltz†, N. Shin†, C. Laude, D. Roberge, C.R. Freeman, J. Seuntjens, W. Parker, *Risk of radiation-induced cardiotoxicity and secondary cancers in Hodgkin's lymphoma patients,* Med. Phys. **39**(6), 3994 (2012). TH-C-213AB-06.
17. E. Chung†, E. Conneely, R. Ruo, M. Foley, J. Seuntjens, *Clinical implementation of the new dosimetry formalism to IMRT quality assurance,* Med. Phys. **39**(6), 3998-3999 (2012). TH-C-BRB-10
18. H. Palmans, R. Alfonso, P. Andreo, R. Capote-Noy, M.S. Huq, J. Izewska, J. Johansson, W. Kilby, T.R. Mackie, A. Meghzifene, K. Rosser, J. Seuntjens, W. Ullrich, *Best in physics (therapy): An international code of practice for the dosimetry of small static photon fields*, Med Phys **39**(6), 4009-10 (2012). TH-E-BRB-05.
19. J. Renaud†, D. Marchington, J. Seuntjens, A. Sarfehnia, *Developing a graphite probe calorimeter for accurate clinical dosimetry*, Med. Phys. **39**(6), 4010 (2012). TH-E-BRB-07.
    http://www.ncbi.nlm.nih.gov/pubmed/22757441

20. H. Bekerat†, K. Singh†, D. Lewis, A. Sarfehnia, J. Seuntjens, S. Devic, *Improving the Energy Dependence of GAFChromic Dosimetry Films at Low Energies,* Med. Phys. **39**(6), 4009-10 (2012). TH-E-BRB-01.
21. D. Lewis, S. Devic, N. Tomic, S. Adelajian, F. DeBlois, M. Chan, J. Seuntjens, *Linearization of dose response curve for the radiochromic film dosimetry system,* Med. Phys. **39**(6), 4010 (2012). TH-E-BRB-02.
22. D. Milroy†, G. Dos Reis, J. Seuntjens, H.J. Patrocinio, *Validation of a commercial Monte Carlo code for stereotactic radiosurgery and stereotactic body radiation therapy,* COMP conference presentation, Med. Phys. **39**(7), 4620 (2012).
23. P. Papaconstadopoulos†, J. Seuntjens, *A fast and accurate source model for energy and intensity modulated electron beams,* Med. Phys. **39**(7), 4620 (2012).
24. A. Alexander†, J. Seuntjens, *Inverse treatment planning for modulated electrons and mixed photon and electron radiotherapy*, Med. Phys. **39**(7) 4622 (2012). DOI:10.1118/1.4740098
25. J. Renaud†, D. Marchington, J. Seuntjens, A. Sarfehnia, *Development of a graphite probe calorimeter for absolute clinical dosimetry: Numerical design optimization, prototyping and experimental proof-of-concept,* Med. Phys. **39**(7), 4623 (2012).

The presentation was awarded the **Third Prize in the J.R. Cunningham Young Investigator Symposium**.

26. E. Chung†, E. Conneely, R. Ruo, M. Foley, J. Seuntjens, *Clinical application of the new dosimetry formalism for composite nonstandard beams*, Med. Phys. **39**(7), 4629 (2012). Thur-Eve-24
27. T. Connell†, J. Seuntjens, *Scattering foil redesign for modulated electron radiotherapy,* Med. Phys. **39**(7), 4629 (2012).
28. M.D.C. Evans, R. Ruo, J. Seuntjens, C.R. Freeman, *RapidArc total body photon irradiation: A feasibility study,* Med. Phys. **39**(7), 4630 (2012).
29. E.T. Soisson, *An Inexpensive and Convenient phantom for quality assurance in image guidance based radiosurgery,* Med. Phys. **39**(7), 4633 (2012).
30. M. Serban, R. Ruo, A. Sarfehnia, W. Parker, M.D.C. Evans, *Commissioning of the Varian ECLIPSE eMC algorithm for clinical electron treatment planning,* Med. Phys. **39**(7), 4633 (2012). (poster) Thur Eve-45.
31. H. Palmans, R. Alfonso, P. Andreo, R. Capote-Noy, M.S. Huq, J. Izewska, J. Johansson, W. Kilby, T.R. Mackie, A. Meghzifene, K. Rosser, J. Seuntjens, W. Ullrich, *Best in physics (therapy): An international code of practice for the dosimetry of small static photon fields*, Med. Phys. **39**(7) 4633 (2012). DOI:10.1118/1.4740154
32. V. Thakur†, E.T. Soisson, R. Ruo, R. Doucet, W. Parker, J. Seuntjens, *Accuracy of stereotactic radiosurgery (SRS) with TomoTherapy as compared to linear accelerator and robotic based radiosurgery,* Med. Phys. **39**(7), 4634 (2012). Thur Eve – 50
33. S. Nasonkin†, A. Syme, *Application of plastic scintillating detectors to orthovoltage x-ray measurements*, Med. Phys. **39**, 4634 (2012).
34. A. Toltz†, N. Shin†, C. Laude, D. Roberge, C.R. Freeman, C., J. Seuntjens, W. Parker, *Prediction of risks of cardiac mortality and secondary cancers after radiotherapy for Hodgkin's lymphoma, non-Hodgkin's lymphoma, and breast cancer*, Med. Phys. **39**(7), 4639 (2012).
35. P. Watson†, E. Mainegra-Hing, E.T. Soisson, I. El Naqa, J. Seuntjens, *Scatter-B-Gon: Implementing a fast Monte Carlo cone-beam computed tomography scatter correction on real data,* Med. Phys. **39**(7), 4644 (2012).
36. A. Tessier, A. Yahya, M. Larocque, B.G. Fallone, A. Syme, *Response of a tumor xenograft model to radiation therapy using magnetic resonance spectroscopy*, Med. Phys. **39**, 4644 (2012).
37. R. Khatchadourian†, S. Davis, M.D.C. Evans, A. Licea, J. Seuntjens, J. Kildea, *Neutron production around a radiation therapy linac bunker: Monte Carlo simulations and physical measurements*, COMP, Med. Phys. **39**(7), 4645 (2012). Sci-Sat AM:Brachy - 04.
38. J. Kildea, W. Parker, *Comprehensive web-based QA in radiation oncology of the Varian ECLIPSE eMC algorithm for clinical electron treatment planning,* Med. Phys. **39**(7), 4645 (2012). Sci-Sat AM: Brachy-05.

39. N. Shin†, A. Toltz†, C. Laude, C.R. Freeman, D. Roberge, J. Seuntjens, W. Parker, *Modeling the risk of secondary solid cancers after radiotherapy in children and young adults: A comparison of intensity modulated proton therapy and photon therapy*, Pediatric Blood & Cancer **59**(6), 975, (2012). Abstract O016.
40. A. Toltz†, N. Shin†, C. Laude, D. Roberge, C.R. Freeman, J. Seuntjens, W. Parker, *Prediction of excess risks of radiation-induced cardiac mortality and secondary cancers after radiotherapy for Hodgkin's lymphoma,* Pediatric Blood & Cancer **59**(6), 998-999 (2012). Abstract O0108.
41. O. Maria†, N. Ybarra, K. Jeyaseelan, Seuntjens, J., El Naqa, I. *Mesenchymal Stem Cells For Recovery From Radiation-Induced Lung Injury*, 3rd Quebec Conference on Therapeutic Resistance in Cancer, Montreal, QC, 2012.
42. M. Carrier-Vallieres, C.R. Freeman, S.R. Skamene, I. El Naqa, *PET/MR imaging for prediction of tumor outcomes by wavelet image fusion and texture analysis,* La Biodola, Isola d'Elba, May 26-30, 2012. Oral Presentation, Journal of Nuclear Instruments and Methods in Physics Research Section A.
43. P. Watson†, E. Mainegra-Hing, E.T. Soisson, I. El Naqa, J. Seuntjens, *Implementation of a fast Monte Carlo calculation of scatter corrections for real CBCT images,* Oral presentation, CAP Congress 2012, June 10-16, 2012.
44. M.A. Thomas, I. El Naqa, E.A. Kidd, F. Dehdashti, J.K. Schwarz, P.W. Grigsby, *Intratumoral heterogeneity assessed by extraction of texture features from PET images of cervical cancer patients*, Int. J. Radiat. Oncol, Biol. Phys. **84**(3S), S20 (2012). Abstract 46.
45. S. Lee†, J. Bradley, N. Ybarra, K. Jeyaseelan, J. Seuntjens, I. El Naqa, *A Bayesian network approach for modeling of radiation pneumonitis*, Int. J. Radiat. Oncol. Biol. Phys. **84**(3S), S79 (2012). Abstract 194.
46. M. Carrier-Vallières†, C.R. Freeman, S. Skamene, I. El Naqa, *FDG-PET features and outcomes in patients with soft-tissue sarcomas of the extremities*, Int. J. Radiat. Oncol, Biol. Phys. **84**(3S), S167-S168 (2012). Abstract 1003.
47. M. Serban, M. Carrier-Vallieres†, L. Hathout, C.R. Freeman, J. Seuntjens, I. El Naqa, *Dose escalation based on MR-PET/CT for soft tissue sarcoma*, Int. J. Radiat. Oncol, Biol. Phys. **84**(3S), S660-S661 (2012). Abstract 3176.
48. O. Maria†, N. Ybarra, K. Jeyaseelan, J. Seuntjens, I. El Naqa, *Mesenchymal stem cells for recovery from radiation-induced lung injury,* Int. J. Radiat. Oncol, Biol. Phys. **84**(3S), S679 (2012). Abstract 3227.
49. A. Toltz†, N. Shin†, C. Laude, D. Roberge, C.R. Freeman, J. Seuntjens, W. Parker, *Prediction of excess risks of radiation-induced cardiac mortality and secondary cancers after radiation therapy for Hodgkin lymphoma,* Int. J. Radiat. Oncol, Biol. Phys. **84**(3S), S751-S752 (2012). Abstract 3420.
50. V. Thakur†, E.T. Soisson, R. Ruo, R. Doucet, J. Seuntjens, *Delivery accuracy of stereotactic radiosurgery (SRS) with tomotherapy as compared to linear accelerator and robotic-based radiosurgery,* Int. J. Radiat. Oncol, Biol. Phys. **84**(3S), S828 (2012). Abstract 3622.
51. D. Markel†, M. Carrier-Vallières†, C.R. Freeman, I. El Naqa, A *novel semi-automated multi-modality segmentation tool for tadiotherapy treatment planning in sarcoma patients*, Int. J. Radiat. Oncol. Biol. Phys. **84**(3S), S854 (2012). Abstract 3687.
52. S. Devic, H. Mohammed, S. Aldelaijan, N. Tomic, J. Seuntjens, F. DeBlois, S. Faria, S. Lehnert, *FDG-based uptake volume histograms: Avenue towards biological target volumes*, Radioth. Oncol. **102**(1), S4-S5 (2012).
53. N. Tomic, J. Seuntjens, F. DeBlois, S. Devic, *Linearization of the radiochromic film dosimetry system dose response*, Radioth. Oncol. **102**(1), S9-S10 (2012).
54. T. Vuong, T. Niazi, S. Devic, P. Kavan, E. Ferland, G. Batist, *Impact of timing of chemotherapy in the treatment of patients with operable rectal cancer: Preliminary results from a randomized phase II study*, Radioth. Oncol. **102**(1), S140-S141 (2012).
55. W.Y. Song, M.J. Webster, D. Han, J. Einck, D. Scanderbeg, T. Vuong, S. Devic, *Dynamic modulated brachytherapy (DMBT): Concept, design, and simulations*, Radioth. Oncol. **103**(2), S44-S45 (2012).
56. A.F. Sadikot, S. Béiault, F. Al Subaie, G.B. Pike, *Creation of a novel interactive tool of computer-assisted multi-modal trajectory planning*, 80th Annual Scientific Meeting of the American Association of Neurological Surgeons, Miami, Florida, April 14-18, 2012.
57. L. Bailey, Y. Xiao, M.M. Chakravarty, A.F. Sadikot, D.L. Collins, *Assessment of atlas warping of small basal ganglia on Colin 27*, 20th International Society for Magnetic Resonance in Medicine (ISMRM) Conference, Melbourne, Australia, May 05-11, 2012, p. 2210.
58. M. Derakhshan, S. Narayanan, D.L. Collins, D.L. Arnold, *Combining SIENA and SIENAx for improved quantification of grey and white matter atrophy*, 20th International Society for Magnetic Resonance in Medicine (ISMRM) Conference, Melbourne, Australia, May 05-11, 2012.

59. Y. Xiao, L. Bailey, M.M. Chakravarty, S. Bereault, A.F. Sadikot, G.B. Pike, D.L. Collins, *Comparing two atlas-based automatic segmentation methods for subthalamic nucleus deep brain stimulation*, 20th International Society for Magnetic Resonance in Medicine (ISMRM) Conference, Melbourne, Australia, May 05-11, 2012.
60. Y. Xiao, L. Bailey, S. Bereault, A.F. Sadikot, G.B. Pike, D.L. Collins, *Validation of T1-weighted inter-subject MRI registration technique for atlas warping in identifying the subthalamic nucleus, red nucleus and substantia nigra*, 20th International Society for Magnetic Resonance in Medicine (ISMRM) Conference, Melbourne, Australia, May 05-11, 2012.
61. H. Ghaderi, A.F. Sadikot, G.B. Pike, *Automatic, rapid, non-invasive and precise thalamic nuclei localization for Deep Brain Surgery using combination of Diffusion Tensor Imaging (DTI) and functional Magnetic Resonance Imaging*, 20th International Society for Magnetic Resonance in Medicine (ISMRM) Conference, Melbourne, Australia, May 05-11, 2012.
62. I.R. Levesque, N. Stikov, G.B. Pike, *Methods for quantitative magnetization transfer imaging*, 20th International Society for Magnetic Resonance in Medicine (ISMRM) Conference, Melbourne, Australia, May 05-11, 2012.
63. N. Stikov, I.R. Levesque, C.L. Tardit, J.K. Barral, G.B. Pike, *Validation of the T_1 mapping methods: Is validation in phantoms sufficient?*, 20th International Society for Magnetic Resonance in Medicine (ISMRM) Conference, Melbourne, Australia, May 05-11, 2012.
64. E. Alonso-Ortiz†, G.B. Pike, *Quantitative fMRI-based evaluation of caffeine's effects on brain physiology*, 20th International Society for Magnetic Resonance in Medicine (ISMRM) Conference, Melbourne, Australia, May 05-11, 2012.
65. Y. Xiao, S. Bereault, A.F. Sadikot, G.B. Pike, D.L. Collins, *Multi-contrast brain templates for segmenting deep brain nuclei*, Annual Meeting of the Organization of Human Brain Mapping, Beijing, China, June 10-14, 2012.
66. P. Voss, G.B. Pike, R. Zatorre, *Compensatory vs atrophy-related neuroanatomical changes in the blind revealed by MT imaging*, Annual Meeting of the Organization of Human Brain Mapping, Beijing, China, June 10-14, 2012.
67. E. Alonso-Ortiz†, G.B. Pike, *Quantitative fMRI-based evaluation of caffeine's effects on brain physiology*, 20th International Society for Magnetic Resonance in Medicine (ISMRM) Conference, Melbourne, Australia, May 05-11, 2012.
68. C. Hawco, J. Armony, M. Berlim, G.B. Pike, M. Lepage, *Time-varying the onset of TMS stimulating during concurrent TMS-fMRI: A method for high temporal resolution explorations of the interactions between brain regions*, Annual Meeting of the Cognitive Neuroscience Society, New Orleans, 2012.
69. F.A. Kotasidis, J.C. Matthews, A.J. Reader, G.I. Angelis, H. Zaidi, *Application of adaptive kinetic modeling for bias propagation reduction in direct 4D image reconstruction*, IEEE Nuclear Science Symposium Conference, Anaheim, California, 2012.

APPENDIX XI.

INVITED PRESENTATIONS

by members of the Medical Physics Unit : 2012 calendar year (x 13)
(in multiple author entries, the author who presented the paper is shown with an asterisk)

1. J. Seuntjens, *Current developments in clinical reference dosimetry protocols*, Noon Seminar Series, Montreal General Hospital, February 9, 2012.
2. S. Devic, *MRI: Simulation for radiotherapy treatment planning*, Continuing education courses, International Conference on Radiation Medicine: Clinical Applications & Innovative Approaches, KFSH&RC, Riyadh, Saudi Arabia, February 27-March 01, 2012.
3. S. Devic, *Image guided brachytherapy*, Joint KFSH&RC/IAEA Course on LDR & HDR Brachytherapy, KFSH&RC, Riyadh, Saudi Arabia, February 27-March 01, 2012.
4. S. Devic, *FDG-PET based differential uptake volume histograms in NSCLC patients*, Continuing education courses, International Conference on Radiation Medicine: Clinical Applications & Innovative Approaches, KFSH&RC, Riyadh, Saudi Arabia, February 27-March 01, 2012.
5. D.L. Collins, *MR image processing and measuring brain volume in children and adults with multiple sclerosis*, 3rd Annual NeuroInflammation Symposium, Toronto, Ontario, March 30, 2012.
6. G.B. Pike, Plenary Speaker, *How to generate contrast in MRI*, International Society for Magnetic Resonance in Medicine (ISMRM) Global Outreach Workshop, Bangkok, Thailand, May 14, 2012.
7. G.B. Pike, Plenary Speaker, *Functional MRI*, International Society for Magnetic Resonance in Medicine (ISMRM) Global Outreach Workshop, Bangkok, Thailand, May 16, 2012.
8. G. Stroian, *Treatment planning for endorectal brachytherapy*, 3D-HDR Brachytherapy Symposium, National University Cancer Institute, Singapore City, Singapore, May 28-30, 2012.
9. G. Stroian, *Image guidance for endorectal brachytherapy*, 3D-HDR Brachytherapy Symposium, National University Cancer Institute, Singapore City, Singapore, May 28-30, 2012.
10. A. Gauvin*, G. Ruthman, R. Blouin, *Metadata mapping for implementing cross-enterprise document sharing for imaging (XDS-i.b)*, Annual Meeting of the Society for Imaging Informatics in Medicine, Orlando, Florida, June 07-10, 2012.
11. D.L. Collins, *Recent work at the IPL on spatio-temporal regularization for analysis of longitudinal data*, MITACS Workshop on Mathematics of Brain Imaging, Simon Fraser University, Burnaby, British Columbia, July 12, 2012.
12. G.B. Pike, *Recent developments and future directions in quantitative functional MRI*, University of Calgary, Edmonton, Alberta, September 13, 2012.
13. J. Seuntjens, *The Role of Accurate Dosimetry Techniques in Image-Guided Radiation Therapy*, University of Wisconsin, Madison, October 11, 2012.

APPENDIX XII.

CONFERENCE & SEMINAR PRESENTATIONS

by members of the Medical Physics Unit : 2012 calendar year (x 31)
*(presenter is indicated by an asterisk *)*
(the names of staff members of the MPU are underlined, students are indicated by †)

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1. M. Carrier-Vallières†*, C.R. Freeman, S.R. Skamene, I. El Naqa, *Prediction of tumor outcomes through wavelet image fusion & texture analysis of PET/MR imaging,* Med Phys. **39**(6), 3615 (2012). SU-D-BRB-03.
2. D. Milroy†*, H. Patrocinio, J. Seuntjens, *Monte Carlo modeling of the Novalis TX stereotactic radiosurgery mode,* Med. Phys. **39**(6), 3874 (2012). MO-F-BRB-05.
3. L. DeWerd, J. Seuntjens*, M. Rivard, M. McEwen, *Dosimetry for Ir-192 HDR brachytherapy: Present status and future direction,* Med. Phys. **39**(6), 3884-3885 (2012). TU-A-213AB-01
4. E. Chung†, S. Davis, J. Seuntjens, *Ion recombination in a liquid-filled ionization chamber in high-energy photon,* Med. Phys. **39**(6), 3887 (2012). TU-A-BRB-09.
5. P. Papaconstadopoulos†*, J. Seuntjens, *Fast and accurate hybrid source model for modulated electron radiotherapy,* Med. Phys. **39**(6), 3944 (2012). WE-C-BRB-04.
6. D. Markel†*, I. El Naqa, *A novel level set active contour algorithm using the Jensen- Rényi divergence for tumor segmentation in PET,* Med Phys. **39**(6), 3961 (2012). WE-E-213CD-08.
7. S. Lee†*, J. Bradley, N. Ybarra, K. Jeyaseelan, J. Seuntjens, I. El Naqa, *Bayesian network framework for biophysical radiation pneumonitis modeling,* Med. Phys. **39**(6), 3993-3994 (2012). TH-C-213AB-03.
8. A. Toltz†*, N. Shin†, C. Laude, D. Roberge, C.R. Freeman, J. Seuntjens, *Risk of radiation-induced cardiotoxicity and secondary cancers in Hodgkin's lymphoma patients,* Med. Phys. **39**(6), 3994 (2012). TH-C-213AB-06.
9. E. Chung†*, E. Conneely, R. Ruo, M. Foley, J. Seuntjens, *Clinical implementation of the new dosimetry formalism to IMRT quality assurance,* Med. Phys. **39**(6), 3998-3999. TH-C-BRB-10
10. H. Bekerat†*, K. Singh†, D. Lewis, A. Sarfehnia, J. Seuntjens, S. Devic, *Improving the energy dependence of GafChromic dosimetry films at low energies,* Med. Phys. **39**(6), 4009-10 (2102). TH-E-BRB-01.
11. D. Lewis, S. Devic*, N. Tomic, S. Adelajian, F. DeBlois, M. Chan, J. Seuntjens, *Linearization of dose response curve for the radiochromic film dosimetry system,* Med. Phys. **39**(6), 4010 (2012). TH-E-BRB-02.
12. J. Renaud†*, D. Marchington, J. Seuntjens, A. Sarfehnia, *Developing a graphite probe calorimeter for accurate clinical dosimetry*, Med. Phys. **39**(6), 4010 (2012). TH-E-BRB-07.
13. http://www.ncbi.nlm.nih.gov/pubmed/22757441
14. D. Milroy†*, G. Dos Reis, J. Seuntjens, H. Patrocinio, *Validation of a commercial Monte Carlo code for stereotactic radiosurgery and stereotactic body radiation therapy*, Med. Phys. **39**(7), 4620 (2012); 58th Annual Meeting of the Canadian Organization of Medical Physicists (COMP), Halifax, Nova Scotia, July 11-14, 2012.
15. P. Papaconstadopoulos†*, J. Seuntjens, *A fast and accurate source model for energy and intensity modulated electron beams,* Med. Phys. **39**(7), 4620 (2012).
16. A. Alexander†*, J. Seuntjens, *Inverse treatment planning for modulated electrons and mixed photon and electron radiotherapy*, Med. Phys. **39**(7), 4622 (2012). DOI:10.1118/1.4740098
17. J. Renaud†*, D. Marchington, J. Seuntjens, A. Sarfehnia, *Development of a graphite probe calorimeter for absolute clinical dosimetry: Numerical design optimization, prototyping and experimental proof-of-concept,* Med.Phys. **39**(7), 4623 (2012).

    The presentation was awarded the **First Prize in the J.R. Cunningham Young Investigator Symposium**.

18. P. Watson†*, E. Mainegra-Hing, E. Soisson, I. El Naqa, J. Seuntjens, *Scatter-B-Gon: Implementing a fast Monte Carlo cone-beam computed tomography scatter correction on real data,* Med. Phys. **39**(7), 4644 (2012).

19. R. Khatchadourian†*, S. Davis, M.D.C. Evans, A. Licea, J. Seuntjens, J. Kildea, *Neutron production around a radiation therapy linac bunker: Monte Carlo simulations and physical measurements*, Med. Phys. **39**(7), 4645 (2012), Sci-Sat AM:Brachy-04; 58th Annual Meeting of the Canadian Organization of Medical Physicists (COMP), Halifax, Nova Scotia, July 11-14, 2012.
20. J. Kildea*, W. Parker, *Comprehensive web-based QA in radiation oncology of the Varian ECLIPSE eMC algorithm for clinical electron treatment planning,* Med. Phys. **39**(7), 4645 (2012). Sci-Sat AM: Brachy-05.
21. S. Aldelaijan*, H. Mohammed, N. Tomic, L. Liang, F. DeBlois, A. Sarfehnia, W. Abdel-Rahman, J. Seuntjens, S. Devic, *Radiochromic film dosimetry of HDR Ir-192 source radiation fields*, International Conference on Radiation Medicine: Clinical Applications and Innovative Approaches, KFSH&RC, Riyadh, Saudi Arabia, February 27-March 01, 2012.
22. S. Devic*, N. Tomic, S. Aldelaijan, F. DeBlois, J. Seuntjens, D. Lewis, *Linearization of the radiochromic film dosimetry system dose response,* International Conference on Radiation Medicine: Clinical Applications and Innovative Approaches, KFSH&RC, Riyadh, Saudi Arabia, February 27-March 01, 2012.
23. S. Devic*, H. Mohammed, S. Aldelaijan, N. Tomic, J. Seuntjens, F. DeBlois, S. Faria, S. Lehnert, *FDG-based uptake volume histograms: Avenue towards biological target volumes*, 5th International Conference on Translational Research and Physics for Health in Europe, Geneva, Switzerland, February 27-March 02, 2012 (abstract #: 19).
24. N. Tomic*, J. Seuntjens, F. DeBlois, S. Devic*, *Linearization of radiochromic film dosimetry system dose response*, 5th International Conference on Translational Research and Physics for Health in Europe, Geneva, Switzerland, February 27-March 02, 2012 (abstract #: 33).
25. O. Maria*, N. Ybarra, K. Jeyaseelan, J. Seuntjens, I. El Naqa, *Mesenchymal stem cells for recovery from radiation-induced lung injury,* 3rd Quebec Conference on Therapeutic Resistance in Cancer, Montreal, Quebec, March 15-17, 2012.
26. M. Carrier-Vallieres†*, C.R. Freeman, S.R. Skamene, I. El Naqa, *PET/MR imaging for prediction of tumor outcomes by wavelet image fusion and texture analysis,* La Biodola, Isola d'Elba, May 26-30, 2012.
27. P. Watson†*, E. Mainegra-Hing, E. Soisson, I. El Naqa, J. Seuntjens, *Implementation of a fast Monte Carlo calculation of scatter corrections for real CBCT images,* Oral presentation, Annual Congress of the Canadian Association of Physicists (CAP), June 10-16, 2012.
28. R. Khatchadourian†*, S. Davis, M.D.C. Evans, A. Licea, J. Seuntjens, J. Kildea, *Neutron shielding simulations of radiotherapy rooms*, 58th Annual Meeting of the Canadian Organization of Medical Physicists (COMP), July 11-14, 2012.
29. R. Khatchadourian†*, S. Davis, M.D.C. Evans, A. Licea, J. Seuntjens, J. Kildea, *Neutron shielding simulations of radiotherapy rooms,* Canadian Nuclear Safety Commission (CNSC), Ottawa, Ontario, September 18, 2012.
30. S. Lee†*, J. Bradley, N. Ybarra, K. Jeyaseelan, J. Seuntjens, I. El Naqa, *A Bayesian network approach for modeling of radiation pneumonitis*, 54th Annual Meeting of the American Society for Radiation Oncology (ASTRO), Boston, Massachusetts, October 28-31, 2012.
31. N. Tomic*, T.Vuong, T. Niazi, B. Bahoric, L. Liang, F. DeBlois, J. Seuntjens, S. Devic, *In vivo skin dose measurements during CBCT guided IGRT in rectal and prostate cancer patients*, 98th Scientific Assembly and Annual Meeting of the Radiological Society of North America, Chicago, Illinois, November 25-30, 2012 (SSE23-03).

APPENDIX XIII.

NEW & ONGOING GRANTS

held by MPU FACULTY MEMBERS in 2012

Grants are generally attained under the auspices of the grantee's primary department, *i.e.,*
either through McGill University (Oncology or Neurology & Neurosurgery)
or the McGill University Health Center (Medical Physics).
[Amounts listed are annual.]

DEBLOIS, F.

L. Beaulieu (PI), **F. DeBlois**, et al.
Advanced model-based dose calculations for brachytherapy clinical applications
Canadian Cancer Society Research Institute (CCSRI), innovation grant
(student support)
(2011-2012).....$17,000

DEVIC, S.

S. Devic (PI)
Radiochromic film dosimetry
Natural Sciences & Engineering Research Council (NSERC), operating grant
(2010-2015).....$27,000

S. Devic
Dosimetrie à film radiochromique
Fonds de la Recherche en Santé du Québec (FRSQ)
Bourse de chercheur-boursier Junior 2
(2011-2013).....$77,515

EL NAQA, I.

I. El Naqa
Start-up grant
Fast Foundation, lab start-up grant (new Faculty)
(2010-2013).....$150,000

I. El Naqa (PI)
A real-time framework for image-guided adaptive radiotherapy
Natural Sciences & Engineering Research Council (NSERC), discovery grant
(2011-2016) $57,000

I. El Naqa (PI)
Modeling of radiotherapy induced damage in locally advanced lung cancer by a novel system radiobiology approach
Canadian Institutes of Health Research (CIHR)
(2011-2016) $135,790

I. El Naqa (PI)
Computational and computational systems radiobiology infrastructure for biomarker discovery and radiosignaling modeling of radiation-induced normal tissue toxicities in cancer patients
Canadian Foundation for Innovation – Infrastructure Operating Fund (CFI-IOF)
(2012-2017).....$60,000

I. El Naqa
Nanosensors for real-time radiotherapy imaging
McGill Collaborative Research & Development Fund
(2012-2013).....$20,000

I. El Naqa
Système integer de macro- et micro-imageries pulmonaires avec rehaussement intelligent en temps reel in vivo dans le diagnostic et le monitorage de l'inflammation et de la reparation du SDRA
Réseau Bio-Imagerie du Québec (RBIQ) (PI: O. Lesur, Univ Sherbrooke)
(submitted) ..... (pending award)

I. El Naqa
Collaborative Research & Training Experience – Medical Physics Research Training Network (CREATE-MPRTN)
Natural Sciences & Engineering Research Council Canada
(2013-2019) (applied 2012) $25,000

EVANS, M.

J. Seuntjens, **M. Evans**, J. Kildea
Research collaboration: Radiation protection for neutrons
Canadian Nuclear Safety Commission (CNSC)
(2012) (expected renewal 2013).....$15,000

KILDEA, J.

J. Seuntjens, M. Evans, J**. Kildea**
Research collaboration: Radiation protection for neutrons
Canadian Nuclear Safety Commission (CNSC)
(2012) (expected renewal 2013).....$15,000

LEHNERT, S.M.

S.M. Lehnert (PI)
Evaluation of radiprotective drug: Studies involving total body irradiation
L.A.B. Institut de Recherche in Pharmacie Industrielle Inc, Contract
(2005-2013).....$50,875

I. El Naqa, **S.M. Lehnert**, et al
Modeling of radiotherapy induced damage in locally advanced lung cancer by a novel system radiobiology approach
Canadian Institutes of Health Research (CIHR)
(2011-2016) $135,790

PARKER, W.

J. Seuntjens, C.R. Freeman, **W. Parker**, G. Shenouda
Monte Carlo-based mixed electron/photon beam inverse treatment planning, delivery and verification
Canadian Institutes for Health Research (CIHR)
(2010-2015).....$60,000

D. Roberge, J.P. Bahary, C. Laverdière, C.R. Freeman, J. Seuntjens, **W. Parker**
Évaluation de l'impact potential d'un centre Québecois de protonthérapie pour les jeunes survivants de cancer
Fonds de recherche en santé Québec (FRSQ)
(2010-2013).....$95,318

PIKE, G.B.

G.B. Pike, D. Arnold
Functional magnetic resonance imaging of brain physiology
Canadian Institutes of Health Research (CIHR), operating grant
(2007-2012).....$606,615

G.B. Pike
Quantitative MRI
James McGill Award
(2007-2013).....$105,000

G.B. Pike
Diffusion imaging of white matter fibre tracts
Natural Sciences and Engineering Research Council (NSERC), discovery grant
(incl. Discovery Acceleratory Supplement of $120,000)
(2007-2012).....$330,000

D. Gaudet, T. Paus, **G.B. Pike** et al
Long-term consequences of prenatal exposure to maternal cigarette smoking on brain structure, function and mental health in adolescence: Role of genes and environment in brain development
Canadian Institutes of Health Research (CIHR), operating grant
(2008-2013).....$1,360,475

J. Gotman, **G.B. Pike**, F. Dubeau
Electrical, metabolic and structural analysis of human epileptogenic lesions
Canadian Institutes of Health Research (CIHR), operating grant
(2008-2013).....$761,750

A. Evans, **G.B. Pike** et al
3D morphometry of the human cortex
Canadian Institutes of Health Research (CIHR), operating grant
(2008-2013).....$148,174

D. Arnold, **G.B. Pike**, S. Narayanan
Imaging demyelination and remyelination in NS
MSSC, operating grant
(2008-2011).....$264,350

G.B. Pike et al.
Imaging innovation and translation
CECR Centre of Excellence Commericilization and Research Grant
(2008-2012).....$1,500,000

B. Bedell, A. Evans, **G.B. Pike**, P. Rosa-Neto, D. Stanimirovic
Multi-parametric imaging studies of novel therapeutic agents in rodent models of glioma
Canadian Institutes of Health Research (CIHR), operating grant
(2008-2012).....$632,896

B. Bedell, A. Evans, E. Hamel, **G.B. Pike**
Integrated in vivo and ex vivo characterization of cerebrovascular dysfunction and its consequences in transgenic models of Alzheimer's disease
Canadian Institutes of Health Research (CIHR), operating grant
(2009-2012).....$507,978

D. Arnold, **G.B. Pike**, S. Narayanan
Imaging inflammation in MS
MSSS, research grant
(2009-2011).....$240,000

N. Bernasconi, **G.B. Pike**
High field imaging of focal epilepsy
Canadian Institutes of Health Research (CIHR), operating grant
(2009-2013).....$393,809

G.B. Pike, L. Collins, A. Olivier
MR venography for image guided neurosurgery
Centre of Excellence in Commercialization & Research, commercialization & research grant
(2010-2012).....$7,500

G.B. Pike et al.
Quantitative magnetic resonance imaging of multiple sclerosis
Canadian Institutes of Health Research (CIHR), operating grant
(2010-2015).....$805,242

R. Zatorre, V. Penhume (PIs), A. Evans, K. Hyde, **G.B. Pike**
Brain anatomy in auditory and motor learning: Predispositions & plasticity
Canadian Institutes of Health Research (CIHR), operating grant
(2010-2015).....$609,163

T. Paus, **G.B. Pike**, D. Gaudet
Programming brains across generations: How early environment and genes shape the risk of addiction
Canadian Institutes of Health Research (CIHR), team grant (Canada-Finland)
(2011-2014).....$600,000

D.L. Arnold, S. Narayanan, **G.B. Pike**
Imaging inflammation in MS
MSSS, operating grant
(2011-2013).....$238,564

D.L. Arnold, **G.B. Pike**, S. Narayanan
MTR assessment of remyelinating therapies
MSSS, operating grant
(2011-2013).....$183,194

V. Gracco, **G.B. Pike** et al.
Regroupement pour la recherche sur le cerveau, le langage et la musique
FQRNT and FQRSC
(2011-2017).....$2,250,000

K. Siddiqi, D.L. Collins, **G.B. Pike**
Reconstruction angulaire et radiale dan l'IRM de diffusion
(Radian and angular reconstruction in diffusion MRI)
FQRNT, team grant
(2011-2014).....$126,000

K. Hyde, **G.B. Pike**, E. Fombonne
Auditory processing in typical development and in autism spectrum disorder:
Insight from the brain and behavior
Canadian Institutes of Health Research (CIHR), operating grant
(2011-2016).....$114,109

G.B. Pike (McGill) (PI), J. Near (Oxford)
Undersampled two-dimensional magnetic resonance spectroscopy for accurate
quantification of tissue metabolites in-vivo
Oxford-McGill Neuroscience Collaboration Funding (OMNC)
(2011-2012).....$10,800

G.B. Pike
Montreal consortium for brain imaging research - II (MCBIR II)
Montreal Consortium for Brain Imaging Research
(2011-2012).....$10,000

M. Beauregard, A Brunet, **G.B Pike**
Self-regulation of ventromedial prefrontal activity in post-traumatic stress disorder:
A real-time fMRI neurofeedback study
Quebec Bio-Imaging Network, Strategic Initiative Program
(2011-2013).....$49,925

G.B. Pike
MRI acquisition and analysis methods for image guided neurosurgery
Natural Sciences & Engineering Research Council – Collaborative Research
& Training Experience (NSERC-CREATE), CREATE grant
(2012-2018).....$500,000

READER, A.

A.J. Reader
Scanner-adaptive image reconstruction platform for accelerated technology transfer in
Positron Emission Tomography
Centre of Excellence in Commercialization & Research
(2010-2011).....$100,000

A.J. Reader
Task-oriented optimization of high- performance positron emission tomography
Natural Sciences & Engineering Research Council (NSERC)
(2010-2015).....$135,000

A.J. Reader
Canada Research Chair in Positron Emission Tomography
Canada Research Chairs Program
(2008-2013).....$500,000

A.J. Reader
Advanced PET image reconstruction, modelling and analysis in neuroscience
Montreal Neurological Institute
(2008-2011).....$300,000

A.J. Reader
Advanced reconstruction algorithms for PET imaging in oncology and neuroscience
EPSRC
(2008-2012).....£417,991 GBP

SEUNTJENS, J.

J. Seuntjens
"Bourse" for students in medical physics
Ministère de la santé et des services sociaux du Québec
(2010-2012).....$34,000

J. Seuntjens
"Bourse" for students in medical physics
Ministère de la santé et des services sociaux du Québec
(2011-2013).....$34,000

J. Seuntjens et al.
Accurate reference dosimetry of non-standard beams using water calorimetry, ionization chambers and Monte Carlo dose calculations
Natural Sciences & Engineering Research Council (NSERC), discovery grant
(2009-2013).....$267,000

D. Roberge (PI), **J. Seuntjens**, et al.
Evaluation de l'impact potentiel d'un centre Québécois de protonthérapie chez les jeunes survivants de cancer
Fonds de la recherche en santé de Québec (FRSQ), research grants
(2010-2013).....$285,955

J. Seuntjens et al.
Monte Carlo-based mixed electron/photon beam inverse treatment planning, delivery and verification
Canadian Institutes for Health Research (CIHR), operating grant
(2010-2015).....$300,000

J. Seuntjens, C.R. Freeman, W. Parker, G. Shenouda
Monte Carlo-based mixed electron/photon beam inverse treatment planning, delivery and verification
Canadian Institutes for Health Research (CIHR)
(2010-2015).....$60,000

D. Roberge, J.P. Bahary, C. Laverdière, C.R. Freeman, **J. Seuntjens**, W. Parker
Évaluation de l'impact potential d'un centre Québecois de protonthérapie pour les jeunes survivants de cancer
Fonds de recherche en santé Québec (FRSQ)
(2010-2013).....$95,318

J. Seuntjens, M. Evans, J. Kildea
Research collaboration: Radiation protection for neutrons
Canadian Nuclear Safety Commission (CNSC)
(2012) (expected renewal 2013).....$15,000

Collaborative Research & Training Experience – Medical Physics Research Training Network (CREATE-MPRTN)
Natural Sciences & Engineering Research Council Canada
(2013-2019) (applied 2012) $25,000

SOISSON, E.T.

D. Rogerge (PI), **E.T. Soisson** et al.
Evaluation de l'impact potentiel d'un centre Québécois de protonthérapie chez les jeunes survivants de cancer
Fonds de la recherche en santé de Québec (FRSQ), research grants
(2010-2013).....$285,955

APPENDIX XIV.

RESEARCH INTERESTS OF THE ACADEMIC MEMBERS OF THE MPU

COLLINS, Louis	*Image processing, registration, segmentation, MRI, image guided neurosurgery, multiple sclerosis, Alzheimer's disease, Parkinson's disease, epilepsy.*
DAVIS, Stephen	*Accurate radiation dosimetry applied to calibration of radiation measurement devices. Commissioning of a Monte Carlo treatment planning system.*
DEBLOIS, François	*Photon and electron beam dosimetry, stereotactic radiosurgery, Monte Carlo treatment planning and medical physics software.*
DEVIC, Slobodan	*Radiochromic film dosimetry; biological target volumes for radiotherapy treatment planning.*
EL NAQA, Issam	*Oncology bioinformatics, computational and systems biology, multimodality imaging, adaptive radiotherapy.*
EVANS, Michael D.C.	*Clinical aspects of radiotherapy, including low and high dose rate brachytherapy, dynamic external beam radiotherapy, linear accelerator calibration and quality assurance, computerized treatment planning, radiation safety.*
GAUVIN, Alain	*Interest in imaging informatics revolves mostly around two topics: regional imaging integration, and multi-system integration of medical imaging within the hospital IT ecosystem.*
HEGYI, Gyorgy	*Image analysis and manipulation, patient radiation dose determination in radiology with special dosimetry techniques, health physics. Different diagnostic imaging procedures can result in significant radiation dose to the patient. The radiation dose to pediatric patients during CT procedures is of special concern. Special dosimmetry tools are required for routine CT dose measurements like radiochromic films, MOSFETs others.*
JANICKI, Christian	*Acts & Regulations for nuclear substances and devices; radiation exposure from medical sources and environment; Linear-No-Threshold (LNT) and cancer risk models; health risks from nuclear accidents (e.g. Fukushima); transport of nuclear substances and waste disposal in the environment; security of nuclear sources and devices in hospitals.*
KILDEA, John	*Electronic QA; database tools, neutron spectra.*
LEGÉR, Pierre	*Distance and position sensing, dose detection, dose delivery, x-ray control, general application of electronic to geophysics and radiotherapy.*
LEHNERT, Shirley M.	*Radiobiology, tumor biology, drug delivery, functional imaging.*

PARKER, William	*Pediatric radiotherapy, quality assurance and dosimetric measurements of IMRT beams.*
PATROCINIO, Horacio J.	*Stereotactic radiosurgery, image-guided stereotactic body radiation therapy, motion and margin assessment in radiotherapy, image-guided brachytherapy.*
PIKE, G. Bruce	*Medical imaging, magnetic resonance imaging, functional brain imaging, brain physiology, image guided neurosurgery.*
PODGORSAK, Ervin B.	*Photon and electron beam dosimetry, stereotactic radiosurgery, general applications of physics to radiotherapy.*
READER, Andrew	*Image reconstruction, 4D Positron Emission Tomography (PET).*
RICHARDSON, Richard B.	*Radiation, p53, stem cells, cancer, aging.*
RUO, Russell	*Intensity modulated radiotherapy (IMRT), image guided radiotherapy (IMGT), stereotactic radiosurgery (SRS).*
SARFEHNIA, Arman	*Water calorimetry, particle therapy dosimetry, detector design and optimization, beam quality, absolute dosimetry.*
SEUNTJENS, Jan P.	*Radiation dosimetry; Monte Carlo simulation; 4D radiation therapy, ionization chambers.*
SOISSON, Emilie	*Stereotactic, tomotherapy, Monte Carlo, image guidance (IGRT).*
STROIAN, Gabriela	*Deformable registration, heterogeneity corrections, Monte simulations, image guided radiotherapy, radiobiological modeling in brachytherapy.*
SYME, Alasdair	*Virtual Isocentre RapidArc (VIRA), novel radiation detectors, plastic scintillation detectors.*
THEBAUT, Jonathan	*Monte Carlo, orthovoltage/superficial, IMRT/VMAT.*
TOMIC, Nada	*Image guided radiation therapy; radiochromic film dosimetry.*
WIERZBICKI, Wieslaw	*TBI, dosimetry of small radiation fields, "in vivo" dosimetry.*

APPENDIX XV.

MPU SEMINAR SERIES : 2012 CALENDAR YEAR

Winter 2011-2012

January 13, 2012 : Richard B. Richardson (AECL Laboratories, Chalk River, ON)
The hazards and etiological role of ionizing radiation (& infection) in childhood leukemia

January 20, 2012 : Sonia Callejo (Department of Opthalmology, McGill University Health Centre, Montreal, QC)
Radiotherapy for ocular tumors

February 09, 2012 : Jan Seuntjens (Medical Physics Unit, McGill University, Montreal, QC)
Current developments in clinical reference dosimetry protocols

March 16, 2012 : Various presentors (McGill University / McGill University Health Centre / Montreal Neurological Institute / Jewish General Hospital, Montreal, QC)
Project presentations to M.Sc. students

March 23, 2012 : Jean-Pierre Bissonnette (Princess Margaret Hospital, Toronto, ON)
Imaging applications for lung cancer radiation therapy

April 05, 2012 : Séverine Rossomme & Stefaan Vynckier (Université Catholique de Louvain, Louvain, Belgium)
Development and characterization of cal0orimeters for primary dosimetry in hadron-therapy

April 13, 2012 : Hugo Bouchard (Radiation Oncology, Hôpital Notre-Dame, Montreal, QC)
Theoretical considerations in radiation dosimetry

June 19, 2012 : B. Gino Fallone (Medical Physics, University of Alberta, Edmonton, AB)
Development and dosimetry advantages of the biplanar linac-MR for real-time MR-guided radiotherapy

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Fall 2012-2013

September 14, 2012 : R. Glenn Wells (Cardiac PET Research, University of Ottawa Heart Institute, Ottawa, ON)
The physics of dose reduction in nuclear medicine

September 28, 2012 : Marco Carlone (Princess Margaret Hospital / Credit Valley Hospital / Univ of Toronto, Toronto, ON)
Integrated patient quality management

October 12, 2012 : Fernando Cardel (RaySearch, Garden City, NY)
Multi-criteria optimization: A new paradigm for IMRT planning

October 19, 2012 : Malcolm McEwen (National Research Council Canada, Ottawa, ON)
Determining the value of W/e in the radiotherapy energy range

November 02, 2012 : D. Louis Collins (McConnell Brain Imaging Centre, Montreal Neurological Institute, Montreal, QC)
Recent progress in image-guided neurosurgery at the Montreal Neurological Institute

November 23, 2012 : Olivier Lesur (Medicine – Pneumology, CHUS-Université de Sherbrooke, Sherbrooke, QC)
In vivo endoscopic confocal fluorescence microscopy (ECFM) of the lung: Abyssal travel… for a virtual biopsy

December 14, 2012 : Gilbert Matte (Pharmacy, McGill University Health Centre, Montreal, QC)
Physicists and the radioisotopes for clinical radiopharmaceutical: Production and concepts

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APPENDIX XVI.

COMMITTEE INVOLVEMENT of MPU FACULTY MEMBERS

within McGill from January-December 2012

COLLINS, L.:
Chair, *Brain Imaging Centre Computing Infrastructure Committee* (2004-present)
Member, *Dept Biomedical Engineering Graduate Committee* (2005-present)
Member, *Graduate Program in NeuroScience Committee* (2000-present)
Chair, *Graduate Program in NeuroScience Admissions Committee* (2008-present)
McConnell Brain Imaging Centre, Montreal Neurological Institute
Member, *Killam Lecture Series Committee* (1999-present)
Member, *MNI Named Lecture Committee* (2002-present)
Montreal Neurological Institute
Member, *Planning Advisory Council – FPG57 MNI Research Space*
McGill University Health Centre

DEBLOIS, F.:
Member, *Medical Physics Residency Committee* (2008-present)
McGill University
Member, *Radiation Oncology Radiation Safety Committee* (2008-present)
Member, *Radiation Oncology Quality Assurance Committee* (2008-present)
SMBD Jewish General Hospital

EL NAQA, I.:
Member, *Medical Physics Radiation Safety Committee* (2010-present)
Member, *Radiation Oncology / Medical Physics Research Committee*
McGill University Health Centre (MUHC)
Member, *Graduate Program Committee; Curriculum Review Committee* (2010-present)
Medical Physics Unit, McGill University

EVANS, M.D.C.:
Member, *Residency Training Committee* (1999-present)
Member, *Radiation Safety Committee*
Medical Physics Unit, McGill University
Member, *Radiation Safety Committee* (2003-present)
Member, *Medical Physics Radiation Safety Committee* (2006-present)
Member, *Radiation Oncology QA Committee* (2002-present)
Member, *Medical Physics QA Committee* (2006-present)
McGill University Health Centre

HEGYI, G.:
Member, *Radiation Safety Committee*
McGill University Health Centre (MUHC)

JANICKI, C.:
Member, *Radiation Safety Committee*
Member, *Research Centre Health & Safety Committee*
Member, *Unité conjointe d'évaluation des technologies de la santé / Joint Technology Assessment Unit (TAU)*
McGill University Health Centre

KILDEA, J.:
Member, *Medical Physics QA Committee*
Member, *Medical Physics Radiation Safety Committee*
Member, *Radiation Oncology Electronic Chart Committee*
Member, *Radiation Oncology LEAN Healthcare Committee*
McGill University Health Centre

LEHNERT, S.M.:
Member, *Radiation Safety Committee*
Member, *Radiation Oncology Residents Training Committee*
McGill University Health Centre

PARKER, W.A.:
Director, *Residency Training Committee (Radiation Oncology Physics)*
Member, *Quality Assurance Committee*
Member, *Radiation Safety Committee*
Medical Physics, McGill University Health Centre
President, *Board of Directors*, MGH Child Care Centre
Clinical Advisor, *Glen Campus Cancer Centre*
Member, *Radiation Therapy Equipment Procurement Committee*
Member, *Access to Treatment Committee (Radiation Oncology)*
Member, *Event Reporting Committee*
Member, *Pre-treatment Image Verification Committee*
Member, *Review of Patient Waiting Times - Quality Assurance Committee (Radiation Oncology)*
McGill University Health Centre
Member, *CARMS – Radiation Oncology Resident Selection Committee*
McGill University

PATROCINIO, H.J.:
Member, *Seminar Committee*
Clinical Coordinator, *Residency Training Program (Radiation Oncology Physics)*
Member, *Residency Training Committee (Radiation Oncology Physics)*
Member, *Medical Physics Quality Assurance Committee*
Member, *Radiation Safety Committee*
Medical Physics, McGill University
Member, *Radiation Oncology Brachytherapy Committee*
Member, *Novalis / SRS Committee*
McGill University Health Centre

PIKE, G.B.:
Co-Chair, *Ad-hoc Committee: Coordination of BME Activities at McGill* (2009-present)
Member, *Departmental Tenure Committee* (2005-present)
Member, *Departmental Advisory Committee* (2010-present)
Member, *Ad-hoc Advisory Committee for Merit Exercises* (2011-present)
Biomedical Engineering Department, McGill University
Member, *Admissions Committee* (2008-present)
Member, *Search Committee – Academic Positions* (2009-present)
Medical Physics Unit, McGill University
Senate representative, *University Tenure Committee* (2009-2012)
Faculty of Education, McGill University
Member, *Recruitment Committee* (2010-2012)
School of Communication Sciences & Disorders, Faculty of Medicine, McGill University

Director, *McConnell Brain Imaging Centre* (1999-present)
Chair, *Magnetic Resonance Research Committee* (1997-present)
Member, *PET Working Committee* (1999-present)
Chair, *BIC Business Committee* (1999-present)
Member, *McBIR Faculty Search Committee* (2002-present)
Member, *Small Animal MRI Committee* (2007-present)
Member, *Centres of Excellence for Commercialization & Research Committee (CECR)* (2007-present)
Special Advisor – *Interim Director of the MNI* (2011-present)
Member, *MNI Strategic Committee* (2009-present)
Member, *CECR Advisory Committee* (2010-present)
Member, *Research Advisory Committee* (2011-present)
Member, *Search Committee for the Director/MNI and Associate Director General/MNH* (2011-present)
Montreal Neurological Institute
Host, *MNI Visit – President of Macedonia, Nikola Gruevski* (August 2012)
Montreal Neurological Institute
Member, *Faculty Search Committee* (2011-present)
Douglas Research Institute

READER, A.: Member, *PET Working Committee* (2008-present)
Montreal Neurological Institute (MNI)

SEUNTJENS, J.: Member, *Recruitment Committee* (2009-2011)
(Director, Radiation Oncology)
Member, *Oncology Management Committee* (2009-present)
Member, *Radiation Therapy Equipment Procurement Committee*
Member, *Admissions Committee*, Medical Physics Unit (2004-present)
McGill University
Member, *Steering Committee (Department of Medical Physics)* 2004-2009)
McGill University Health Centre
Graduate Program Director MPU (2009- present)
Member, Departmental Tenure Committee (Oncology)
Member, University Tenure Committee (Religious Studies)
Member, *Grant Review Committee – Studentship & Fellowship Awards*
Research Institute, McGill University Health Centre

SOISSON, E.: Member, *Grant Review Committee – Studentship & Fellowship Awards*
Research Institute, McGill University Health Centre
Member, *IGRT Committee,* Radiation Oncology Department
Member, *Dosimetry Committee*, Radiation Oncology Department
Member, *Machine Quality Assurance Committee*
McGill University Health Centre

APPENDIX XVII.

COMMITTEE INVOLVEMENT of MPU STAFF MEMBERS OUTSIDE McGILL from January-December 2012

COLLINS, D.L.:
Consultant, *NeuroRx Research*, Montreal (2005-present)
Contributor, *endMS Research & Training Network*, Teaching & Research activities
Quebec-Ottawa RRTC (2009-2012)

DEBLOIS, F.:
President, (2011-present)
Member, *Science & Education Committee; Professional Affairs Committee; Quality Assurance & Radiation Safety Committee* (2010-present)
Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC)

DEVIC, S.:
Member, *Board of Editors*
Journal of Medical Physics

EL NAQA, I.:
Member, *AAPM Task Group No. 211 – Classification, Advantages & Limitations of the Autosegmentation Approaches for PET* (2011-present)
Member, *Working Group on Biological Effects of Hypofractionated Radiotherapy/SBRT* (2011)
Member, *Editorial Board*
Journal Radiation Oncology Informatics (2009-present)
Member, *Editorial Board*
American Journal of Science & Engineering (2011-present)
Organizing Chair, *Special Session on Data Mining Methods for Modeling Treatment Outcomes in Cancer*
ICMLA, Honolulu, Hawaii, (2011)

EVANS, M.D.C.:
Member, *Membership Oral Exam Committee*
Representative, *International Conjoint Committee on Accreditation: Site visit CAN-Qatar* (Doha, Qatar, March 2011)
Canadian Medical Association (CMA)
Member, *TG113 Clinical Trials Working Group*
American Association of Physicists in Medicine (AAPM)
Member, *Quality Assurance & Radioprotection Committee*
Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC)

LEHNERT, S.M.:
Member, *Scientific Advisory Committee* (2001-present)
Biological Research Facility, AECL Laboratories, Chalk River
Member, *Scientific Advisory Board* (2005-present)
Resonant Medical Systems, Montreal, Quebec
Member, *Editorial Advisory Board*
Open Nuclear Medicine Journal
Member, *Editorial Board*
International Journal of Cancer Research & Remedies

PARKER, W.A.:
Chairman, *Summer School Sub-Committee*
Member, *Continuing Professional Development Committee*
Chairman, *RSNA Education Coordination Sub-Committee*
American Association of Physicists in Medicine (AAPM)
Oral Examiner, *Membership Exam*
Canadian College of Physicists in Medicine (CCPM)
Member, *Comité de devis techniques en radiothérapie*
Association Québecoise des Physiciens Médicaux Cliniques (AQPMC)
Member, *Credential Review Committee*
Canadian College of Physicists in Medicine (CCPM)

PATROCINIO, H.J.:
Member, *Canada Advisory Committee for UICC 2012*
Member, *Board*
Oral examiner, *Fellowship & Membership exams*
Canadian College of Physicists in Medicine (CCPM)
Member, *Professional Affairs Committee*
Canadian Organization of Medical Physicists (COMP)
ABR Item Writer, *Radiological Physics exam*
American Board of Radiology

PIKE, G.B.:
Ad-hoc reviewer & Panel Member,
Multiple Granting Agencies
Member, *Editorial Board*
Journal - NeuroImage
Member, *Advisory Board / Committee*
CInAPCe (Neuroscience) Project, Sao Paolo, Brazil
Quantitative Neuroscience with Magnetic Resonance (QNMR), Yale University
Quebec Bio-Imaging Network (QBIN)
National Research Council of Canada, Institute for Biodiagnostics
Ontario Institute for Cancer Research (Chair, January 2013)

READER, Andrew:
Reviewer, *Grant applications*
Research Grants Council, Hong Kong
Wellcome Trust, England
Associate Editor,
International Journal of Tomography & Statistics
Member, *IEEE Nuclear & Medical Imaging Sciences Council* (2011-present)
Member, *Scientific Committee*, Fully 3D Reconstruction Meeting (2011)

SEUNTJENS, J.:
Key Mentor (national), *Excellence in Radiation Research in the 21st Century Training Program* (EIRR21)
Canadian Institutes for Health Research (2006-present)
Chair, *Committee on Small-field Photon Dosimetry & Applications in Radiotherapy* (2010-present)
International Commission on Radiation Units & Measurements (ICRU)
Member, *Medical Physics & Imaging grant panel* (2009-present)
Canadian Institutes for Health Research (CIHR)
Chair, *Workgroup on the Development of a Calibration Protocol for TG-51 Non-compliant Beams* (2007-present)
American Association of Physicists in Medicine (AAPM)
Member, *International Advisory Committee on Small-field Dosimetry*
International Atomic Energy Agency (IAEA) (2007-present)
Member, *Workgroup on Update of TG-51 (WGTG51)* (2006-present)
American Association of Physicists in Medicine (AAPM)
Member, *International Advisory Committee on IAEA Phase Space*
International Atomic Energy Agency (IAEA) (2006-present)

SOISSON, E.: Member, *Imaging for Treatment Verification Work Group*
Member, *Usability & Vendor Relations Sub-Committee*
American Association of Physicists in Medicine

WIERZBICKI, W.: Member, *Provincial Government Radiation Oncology Committee*
Member, *Committée pour achats regroupés des accélérateurs*
Quebec City, Quebec