Mechanical Engineering Colloquium

November 14th, 2014

Macdonald Engineering Building (MD) 267 from 11 - 12 pm

Professor J. G. Cervantes

Faculty of Engineering

National University of Mexico, Mexico

THE STROUHAL NUMBER OF FISH UNDULATORY SWIMMING AND THE BUCKLING OF FLUID COLUMNS

ABSTRACT

An analogy between fish undulatory swimming and the buckling of fluid columns is presented and discussed. The most important aspects of the undulatory swimming of a fish, from the mechanical point of view, are described. The buckling response of solid and fluid columns is summarized and applied to a swimming fish, as an analogue of buckling columns. The predictable Strouhal number for a buckling fish, agrees well with the apparently universal experimental value, observed by numerous investigators of fish undulatory swimming.

BIO

Jaime Cervantes received his BSME (1970) and MSME (1972) from the National University of Mexico and his PhD from Purdue University (1976). His research focuses on fluid mechanics and heat transfer, and has authored over 150 publications including textbooks, monographs and original research papers. He is a Distinguished Professor and received the 2002 'Universidad Nacional' Award as the Best Teacher in Exact Sciences. He is a member of the Mexican Academy of Engineering, the Mexican Academy of Sciences and the International Centre for Heat and Mass Transfer. He is a Fellow of ASME.