

# M.I.M.E. Fall 2009 Graduate Seminar Series

Friday, November 13, 2009  
12:00—1:00 PM  
Nitschke Auditorium (NA 1000)

## *WAVE BEARING Technology and Applications*

### ABSTRACT

The wave bearing is an innovative fluid film bearing concept that was introduced in early 1990's by Dr. Florin Dimofte. When compare to conventional fluid film bearings, this bearing provides improved dynamic stability and increased load capacity. The load carrying capacity of the wave bearing is higher than that of the plain journal bearing because of its thermal stability. The wave bearing has been comprehensively analyzed. Any fluid can be used to lubricate this bearing. The analytical predictions of the wave bearing performance have been validated experimentally on test rigs developed at NASA Glenn Research Center in Cleveland. Oil lubricated wave bearings can be applied in aircraft and helicopter gearboxes to reduce their weight and size as well as to diminish the vibration and noise generated by these transmissions. A program to apply the wave bearings to aerospace transmissions is in progress at NASA GRC. Air lubricated wave bearings can be used in small turbojet engines to eliminate the oil in the hot areas of these engines. A program to use air/gas lubricated wave bearings in small turbojets engine is in progress at the Small Turbine Institute of the MIME Department in collaboration with TEDYNE CONTINENTAL MOTORS –Turbine Engines Corporation.

### BRIEF BIO:

Dr. Florin Dimofte, is currently working at NASA Glenn Research Center, Cleveland, Ohio. He is also coordinating the wave bearing program at the MIME Small Turbine Institute of the University of Toledo. His research interests are in steady-state and dynamic performance of fluid film bearings including bearing stability, new gas and oil bearing concepts, dynamic behavior of rotor-bearing systems, and new aerospace transmissions with shafts and gears supported by fluid film bearings. He has been author or coauthor of over 140 papers and a book, *Tribology for Aerospace Applications*. He is the holder of 7 patents. Dr. Florin Dimofte has been recognized for his research. He received NASA Certificate of Recognition for "Waved Journal-Slider Bearing (1992), NASA award "Turning Goals into Reality" (2002) and the STLE Certificate of Appreciation for a Valued Contribution to the book "Tribology for Aerospace Application". He has been session chairman of the STLE annual meetings and STLE-ASME Tribology Conferences since 1994, and paper reviewer for STLE Tribology Transaction, ASME Journal of Tribology, and AIAA Journal of Propulsion and Power.



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