Séminaire du laboratoire PIMM

Jeudi 9 juin 2022 à 13h30

Prof. Julio C. GÒMEZ-MANCILLA

Laboratoire de vibrations et roto dynamique, ESIME, *Instituto Politécnico Nacional*, IPN, Mexique, chercheur invité au PIMM

présentera dans le cadre du séminaire ses travaux intitulés :

Vibration Technics, Damage Indexes & Method Applied to 1-D Structures to Detect its Damage Onset & Subsequent Monitoring; Also VHCF Testing Recommendations

Structures, bridges, platforms, engineering devices, transports including nowadays airplanes, trains & vehicles, demand stringent safety measures to be considered and implemented in their design and manufacture. The derived innovative mathematical expressions of the damage indexes used in the developed methodology capture the essence of inherent damage features; from there its success in detecting, locating it and assessing its severity. Also a good mathematical modeling damage and fracture mechanics behavior is a must. Detection at crack onset well before the structure collapses, is one achievement. SHM monitors and keeps track of such damage in a cheap efficient manner, to comply with the previous requirements with minimum invasiveness. The method is robust and versatile, adaptable to be applied to an ample variety of 1-D structures. My vibrational techniques take advantage of state-of-the-art sensors, transducers, computing, electronics and advanced signal processing. One co-tutelle subject is, data driven SHM techniques for damage detection at its onset in airplanes and risk-prone structures. Another co-tutelle can be, Re-designing VHCF experimental procedures for an international standard based on vibrating techniques. The previous is related to designing better methods to characterize materials testing and manufacturing processes; i.e., here proposals based on dynamics to improve the current VHCF experimental procedures are considered, towards a VHCF international standard. I'd be glad to consider IPN-ENSAM, Mexique-France joint doctoral co-tutelles along with professors from PIMM Lab, CONACyT provides scholarships from Mexico's part (the polytechnic IPN has 27 campus spanning Mexico-wide); please write to gomezmancilla@gmail.com