

**SEMINAIRE SCIENTIFIQUE – ECOLE DOCTORALE MEGA**

Mardi 21 mai 2019 de 15h à 16H

IFSTTAR - Salle Léonard de Vinci

Cité des Mobilités - Bron

**Docteur Niall Colgan,**

Director of the Advanced Biological Imaging Laboratory, National University of Ireland, Galway

***Title :*** The role of imaging in tissue mechanics

***Abstract :***

The in-vivo mechanical response of tissue during loading is simulated using geometrically accurate finite element (FE) models. However, FE models often do not account for the anisotropic elastic material behaviour of tissue. In soft biological tissue, there is a correlation between internal microscopic structure and macroscopic mechanical properties. By exploiting novel techniques the anisotropic orientation and nature of tissue can be incorporated into non-linear viscoelastic material models for implementation in FE analysis to more accurately describe the mechanical response of tissue in silica.

***Biography :***

Dr. Niall Colgan is the director of the advanced biological imaging laboratory (ABIL) at National University of Ireland Galway and a clinical medical physicist. His work has been applied in diagnostic imaging projects related to dementia, acquired brain injury, psychosis, neurological disorder, oncology, musculoskeletal and cardiac disease. His primary research focus is biophysics and diagnostic imaging, particularly MR metabolite imaging and diffusion MRI however he also has active research programs in ionizing imaging, computational modeling/simulation, Microscopy, data mining, clinical instrumentation and tissue mechanics. He has led research teams in the area of preclinical imaging bio-markers and preclinical drug trials and has directed and established clinical imaging research facilities utilized in clinical research and trials. A particular interest is the development of imaging methods that will open up new possibilities for the diagnosis and evaluation of therapeutic efficacy