Potential Supervisors

Professor Antoine Jérusalem

Professor Antoine Jérusalem graduated in 2004 with a double degree from the Ecole Nationale Supérieure de l'Aéronautique et de l'Espace with a Diplôme d'Ingénieur, and from the Massachusetts Institute of Technology with a Master of Science in Aeronautics and Astronautics. In 2007, he obtained his Ph.D. in Computational Mechanics of Materials from MIT, where he stayed as a Postdoctoral Associate for a year.

He was the group leader of the Computational Mechanics of Materials Group in Madrid's Advanced Studies Institute of Materials (IMDEA-Materials) from 2008 to 2012, and is currently an Associate Professor in the Department of Engineering Science of the University of Oxford. He is also an Affiliate Researcher in the Mathematical Institute at Oxford and the co-director of the International Brain Mechanics and Trauma Lab.

His research activities focus on computational modelling of many types of materials and structures, ranging from nanocrystalline and HCP metals to composite materials with a more recent focus on neurons. His modelling activities involve the development and use of advanced numerical techniques such as massive parallel computation, XFEM, GPU solvers, DG methods, etc. Professor Jérusalem has active collaborations with different institutes and universities around the world.

Software Tools Developed

Neurite - Neurite simulates the electrical signal propagation in myelinated and unmyelinated axons, and in dendritic trees under mechanical loading. Two different solvers are available (explicit and implicit) with sequential (CPU) and parallel (GPUs) versions.

OxFEMM - OxFEMM is a scalable parallel finite element-meshless coupled program for multiphysics simulations with a special focus on biomedical applications, such as stroke and traumatic brain injury.

Involvement of (previous) Students

Yun Bing

Dr Dongli Li

Dr Daniel Garcia-Gonzalez

Dr Daniel Barba

Dr Julian Garcia