
Applied Mathematics Seminar



Lara Hawchar

School of Mathematical Sciences, University College Cork

Probabilistic computing for structural reliability analysis, design optimisation and risk assessment

After years of study and a PhD in civil engineering, I couldn't agree more on this: "Structural engineering is the art of modelling materials we do not wholly understand, into shapes we cannot precisely analyse so as to withstand forces we cannot properly assess, in such a way that the public has no reason to suspect the extent of our ignorance."

Dealing with uncertainties in structural engineering was the core of my research work over the past 5 years. At this seminar, I will present probabilistic approaches that allow to perform 1) time-variant reliability analysis, 2) reliability-based design optimization and 3) risk assessment and decision-making. These approaches are mainly based on surrogate modelling techniques (e.g. polynomial chaos expansion, low rank approximation, kriging). Probabilistic approaches are ideal for assessing the impacts of climate change – with all the uncertainties around it – on structures and infrastructures. At this talk, I will share results on climate change impacts on Irish power pole network and climate adaptation strategies.

Thursday, 23.01.2020 · 12:00 · WGB G02
University College Cork · Western Road · Cork · T12 XF62