



MUMS Program Opening Workshop August 20-24, 2018

SPEAKER TITLE/ABSTRACT

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“The Isaac Newton Institute Uncertainty Quantification Programme: A Personal Perspective”

Between January and June, 2018 the Isaac Newton Institute for Mathematical Sciences in the UK ran a six month programme on uncertainty quantification. The aim of the programme was to bring together the applied mathematics/numerical analysis and the statistical communities, who have different approaches to the problem on quantifying uncertainty in complex numerical models. Despite joint initiatives from groups such as SIAM and the ASA on journals and conferences the two communities remain separate and there was little understanding from one group on what the other does. The programme was organised by Peter Challenor (University of Exeter), Max Gunzberger (Florida State University), Catherine Powell (University of Manchester) and Henry Wynn (London School of Economics). Our core themes were: surrogate models; multilevel, multi-scale, and multi-fidelity methods; dimension reduction methods; inverse UQ methods; and careful and fair comparisons. INI programme participants attend the programme for up to six months and have opportunities to work together in a collaborative way. Most of our participants attended for between 2-4 weeks. In addition to the participants we had a number of workshops. Four one week workshops on: key UQ methodologies and motivating applications (an introductory workshop to give introductions to UQ methodologies from both traditions); surrogate models for UQ in complex systems; reducing dimensions and cost for UQ in complex systems; and UQ for inverse problems in complex systems; and two one day workshops aimed at industry and other stakeholders. Most of the talks from the workshops are available on line. I will outline what happened during the programme and give my personal views on the achievements of the programme and what is still left to do.