



# ABSTRACTS

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## Modelling the weather and climate

Brian Hoskins, Imperial College London

The nature of simple and complex weather and climate models will be discussed, starting from the equations of fluid flow and thermodynamics. Uncertainty associated with sensitivity to initial conditions, representations of processes and the structure of the models will be discussed, and some ways uncertainties are handled, particularly in weather forecasting, will be reviewed.

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## Language-based Games

Joe Halpern, Cornell University

We introduce language-based games, a generalization of psychological games that can also capture reference-dependent preferences. In language-based games, the domain of the utility function is extended to what we call situations: maximal sets of atomic formulas in some language. The role of the underlying language in this framework is thus particularly critical. By choosing the right language, we can capture psychological games [Geanakoplos, Pearce, and Stachetti] and reference-dependent preference [Koszegi and Rabin]. Of special interest are languages that can express only coarse beliefs (eg, the probability of an event is “high” or “low”, rather than “the probability is .628”). Despite the expressive power of the approach, we show that it can describe games in a simple, natural way. Nash equilibrium and rationalizability are generalized to this setting; Nash equilibrium is shown not to exist in general, while the existence of rationalizable strategies is proved under mild conditions.

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## Model Uncertainty and Risk Aggregation

Paul Embrechts, ETH Zurich

The recent financial crises have triggered a multitude of regulatory documents worldwide; some of these were more politically driven, others touched strongly on corporate governance within the banking world going forward, whereas a third category proposes specific guidelines for the calculation of risk capital. The latter, more methodologically oriented documents, very much question some of the rules and practices in the calculation of Risk Weighted Assets. Based on the

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A Bayesian Framework for

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# Biographies of speakers

Professor Al-Najjar is the John L. and Helen Kellogg Professor of Managerial Economics and Decision Sciences at the Kellogg School of Management, Northwestern University. His research focuses on learning, games, and decision making under uncertainty.

Sir Brian Hoskins became the first Director of the Grantham Institute for Climate Change at Imperial College London in January 2008, and now shares his time between Imperial and Reading University, where he is Professor of Meteorology. His degrees are in mathematics from the University of Cambridge and he spent post-doc years in the USA before moving to Reading, where he became a Professor in his thirties and was a head of department for six years. For the 10 years up to September 2010 he held a Royal Society Research Professorship. His research is in weather and climate, in particular the understanding of atmospheric motion from frontal to planetary scales. His international roles have included being vice-chair of the Joint Scientific Committee for the World Climate Research Programme, President of the International Association of Meteorology and Atmospheric Sciences and involvement in the