

Editorial

CEMRACS 2017

Numerical methods for stochastic models: control, uncertainty quantification, mean-field

This special volume gathers research works that have been conducted during the 22nd edition of CEMRACS, on the topics "Numerical methods for stochastic models: control, uncertainty quantification, mean-field", which took place at CIRM (Luminy) from July 17th to August 25th, 2017. The CEMRACS (Centre d'Eté Mathématique de Recherche Avancée en Calcul Scientifique), initiated by Yvon Maday and Frédéric Coquel in 1996, takes place each summer and consists in two parts: the first phase with one week of courses, the second with a five week period of research on projects, gathering young researchers and senior researchers.

The CERMACS'17 has been dedicated to the study of advanced numerical methods for the analysis of stochastic models associated with stochastic control problems, uncertainty quantification or mean-field type interaction phenomena. These models are echoes of many industrial applications (production optimization systems, life sciences, neuroscience, geophysics, fluid mechanics, risk management in finance, etc.). The main difficulties are the non-linearity and the high dimension of the problems encountered in practice. Academic research has been very active in recent years, offering different approaches in parallel. However, it remains relatively compartmentalized in disciplinary or application fields. The objective of this CERMACS has been to take stock of various techniques among the most advanced (both from the academic and applicative view-points), to encourage interactions between the different communities working on these topics and to develop new results. More than 140 researchers from more than 20 countries participated to this CEMRACS'17, making this CEMRACS edition successful. More details are available at <http://smai.emath.fr/cemracs/cemracs17/>

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The organizers: Bruno Bouchard, Jean-Francois Chassagneux, François Delarue, Emmanuel Gobet and Jérôme Lelong