Editorial of CEMRACS 2022

"Transport in physics, biology and urban traffic"

This special volume gathers research works that have been conducted during the 26th edition of the summer school CEMRACS (Centre d'Eté Mathématique de Recherche Avancée en Calcul Scientifique), which took place at CIRM (Centre International de Rencontre Mathématique) in Luminy from July 18th to August 26th, 2022.

The CEMRACS is a scientific event of the SMAI (the French Society of Applied and Industrial Mathematics). The concept was initiated in 1996 by Yvon Maday and Frédéric Coquel and takes place every year at CIRM in Luminy (Marseille, France) during 6 weeks from mid-July. The goal of this event is to bring together scientists from both the academic and industrial communities to work and discuss on focused topics. During the first week, a classical school is proposed. It consists of several lectures given by leading scientists and related to the topics of the research projects. The remaining 5 weeks are dedicated to working on the research projects, possibly after a morning seminar.

This CEMRACS 2022 was dedicated to the mathematical modelling, analysis and numerical simulation of transport problems arising from diverse scientific fields. Transport problems encompass both fundamental and industrial issues. The topic was very large, covering a broad spectrum of applications. Problems studied included ions in plasma, cellular motion and intracellular motility, and urban mobility. The research encompassed both theoretical analysis and the development of various numerical schemes. This volume of ESAIM:ProcS gathers some contributions on mathematical models, numerical schemes and their analysis related to transport processes. These contributions are the result of works conducted during the research session of CEMRACS22. More details are available at `http://smai.emath.fr/cemracs/cemracs22`.

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