CEMRACS 2015

Centre d'Eté Mathématique de Recherche Avancée en Calcul Scientifique

CIRM, Marseille, France

July 20th — August 28th, 2015







FLUIDS & CO. Coupling Multi-Physics Models involving Fluids

The CEMRACS is a scientific event of the SMAI (the French Society of Applied and Industrial Mathematics), devoted this year to multi-physics modeling involving fluids. It will consist in two joint events:

Summer school (July 20th — 24th) with focus on fluid coupling in life sciences

- Didier Bresch (CNRS LAMA)
- Alberto Figueroa (King's College, London)
- Céline Grandmont (Inria LJLL)
- Igor Aronson (Argone National Lab, Chicago)
- Paul Vigneaux (ENS Lyon UMPA)

Research session (July 27th — August 28th)

Organizers: Emmanuel Frénod (UBS — Vannes), Emmanuel Maitre (U. Grenoble), Antoine Rousseau (Inria — Montpellier), Stéphanie Salmon (URCA — Reims), Marcela Szopos (U. Strasbourg)

Informations and registration:

<u>cemracs15@smai.emath.fr</u> <u>http://smai.emath.fr/cemracs/cemracs15</u>









- physiological flows, including multi-scale aspects (e.g.: blood rheology, red blood cells, interaction with vessels ...)
- aquatic living systems, seabed and paralic ecosystems, in environments such as lagoons, estuaries, bays, ...
- morphodynamics of continental, coastal and deep sea areas.
- fluid-structure and fluid-gaz interactions, including elastic cell membranes interacting with fluid, Leidenfrost effect, ebullition crisis, ...

Societal challenges

- Biomedical: medication by inhalation, artery prothesis makeup and install, regulation of blood flow in brain vessels, use of micro-swimmers in pharmacology, ...
- Environmental: preservation and exploitation of aquatic ecosystems, simulation of ocean-atmosphere interaction, fight against erosion and siltation, study of micro-organisms based filtration devices, ...
- Technological: Lab on a chip, micro-fluidic circuits, surface coating, water cooling, micro-swimmers ...





