INSTITUT D'ETUDES SCIENTIFIQUES DE CARGÈSE

Cargèse International School 2018

Symmetry, similarity and conservation laws in solid and fluid mechanics

April 16 - 20, 2018

Web site

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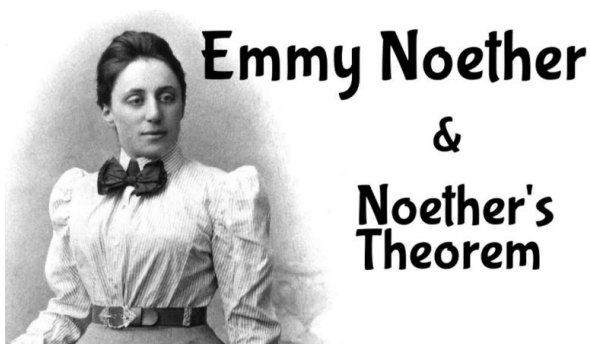

UNIVERSITÉ DE LORRAINE

TECHNISCHE UNIVERSITÄT DARMSTADT

Université franco-allemande Deutsch-Französische Hochschule

The notion of symmetry is not only a fascinating aspect in nature, but it also reveals as a fun-damental scientific concept that has invaded many scientific disciplines, from physics, biology up to mathematics. Independently from its aesthetic attraction, the symmetry intrinsically con-tained in physical systems allows a concise description of both their invariance properties (geometrical, temporal, dynamical, statistical or under a given transformation of a set of rele-vant variables) and a systematic prediction of the various phenomena susceptible to occur in these systems. This in turn allows a classification of physical systems in terms of their sym-metries, which clearly highlights analogies and contributes to a unifying view of their behavior. In fact, it was Einstein's who contemplated the symmetry principle as the key feature of physics that confines the admissible laws of a physical system.

Main topics will include

Introduction to symmetries and conservation laws

- Derivation of symmetries and conservation laws
- Analytical solutions to ODEs and PDEs using
- symmetries and conservation laws
- Use of computational method to derive symmetries and conservation laws
- Applications to solid mechanics
- Applications to fluid mechanics such as laminar flows, turbulence, visco-elastic flows, etc

Eminent scientists in the field will animate the workshop. These include:

George Bluman (UBC, Vancouver, CA), Alexey Cheviakov (Univ. Saskatchewan, CA), Jean-François Ganghoffer (Univ de Lorraine, Nancy, FR), Martin Oberlack (TU Darmstadt, DE), Vladislav Pukhnachev (Lavrentyev Inst of Hydrodynamics, Novosibirsk, RU), Rachid Rahouadj (Univ. Lorraine, Nancy FR)

Scientific Committee

George Bluman (UBC, Vancouver, CA), Jean-François Ganghoffer (Univ de Lorraine, Nancy, FR), Martin Oberlack (Chair of Fluid Dynamics, TU Darmstadt, DE), Alexey Sheviakov (Univ. Saskatchewan, CA), Marta Waclawczyk (Inst of Geophysics, Warsaw, PL),

Organization Committee

Georges Bluman (Dept of Mathematics Vancouver), Jean-François Ganghoffer (Univ de Lorraine, Nancy, FR),Alexey Sheviakov (Univ. Saskatchewan, CA), Martin Oberlack (Chair of Fluid Dynamics, TU Darmstadt, DE)

Application and registration

http://www.iesc.univ-corse.fr/en/participation/online-registration/
Contact : jean-francois.ganghoffer@univ-Lorraine.fr; oberlack@fdy.tu-darmstadt.de
Deadline Application : 2018,15th February
Registration Fees : 200€ PhD students or post-docs