SPIGL'20

CNRS | cea | UNIVERSITÉ DE LYON | ENS DE LYON

Grenoble INP | UGA | UGA Université Grenoble Alpes

ÉCOLE DE PHYSIQUE DES HOUCHES

Carnot, Clausius, Massieu, Helmholtz, Boltzmann, Gibbs, Duhem

Poincaré, Planck, Langevin, Carathéodory, Brillouin, Callen, Balian

Fréchet, Fisher, Shannon, Cramer, Rao, Chentsov, Amari

Bargmann, Souriau, Kirillov, Kostant, Koszul, Vinberg

Noether, Libermann, Choquet-Bruhat, DeWitt-Morette, Uhlenbeck, Vergne, Saint-Raymond

Joint Structures and Common Foundation of Statistical Physics, Information Geometry and Inference for Learning

26th July to 31st July 2020

Registration, Poster Submission: https://franknielsen.github.io/SPIG-LesHouches2020/

15 Keynotes (60 min)

SGD & Variational Inference - **Pratik Chaudhari**
Fast MCMC via Lie Group - **Steve Huntsman**
HMC on Symmetric/Homogeneous Spaces - **Alessandro Barp**
Exponential Family by Representation Theory - **Koichi Tojo**
Learning Physics from Data - **Francisco Chinesta**
Information Geometry & Integrable Hamiltonian - **Jean-Pierre Françoise**
Information Geometry & Quantum Field - **Ro Jefferson**
Physical Limits to Information Processing - **Susanne Still**
Diffeological Fisher Metric - **Hông Vân Lê**
Deep Learning as Optimal Control - **Elena Celledoni**
Dirac structures in Thermodynamics - **Hiroaki Yoshimura**
Port Thermodynamic Systems Control - **Bernhard Maschke**
Covariant Momentum Map Thermodynamics - **Goffredo Chirco**
Contact Hamiltonian Systems - **Manuel de León**
Multibody-Fluid System Dynamics in Lie group - **Zdravko Terze**

8 Lectures (90 min)

Langevin Dynamics: Old and News (x 2) – Eric Moulines
Computational Information Geometry
Divergence based Machine Learning – Frank Nielsen
Non-Parametric and Orlicz Spaces – Giovanni Pistone
Non-Equilibrium Thermodynamic Geometry
Evolution Equations for Open Systems - François Gay-Balmaz
An Homogeneous Symplectic Approach - Arjan van der Schaft
Geometric Mechanics
Gallilean Mechanics & Thermodynamics of Continua - Géry de Saxcé
Souriau-Casimir Lie Groups Thermodynamics & Machine Learning – F. Barbaresco