

Quantum and Kinetic Problems: Modeling, Analysis, Numerics and Applications

Workshop 2: Modeling and Simulation for Quantum Condensation, Fluids and Information
(18–22 November 2019)

| Name & Affiliation | Talk Title |
|---|--|
| Mark Ainsworth Brown University, USA | Fractional Cahn-Hilliard equation(s): analysis, properties and approximation |
| Christophe Besse Université Toulouse III - Paul Sabatier, France | Energy preserving method for nonlinear Schrödinger equations (Slides) (Video) |
| Blair Blakie The University of Otago, New Zealand | Droplets and supersolids - novel physics of dipolar Bose-Einstein condensates (Slides) (Video) |
| Marc Brachet Laboratoire de Physique de l'École Normale Supérieure, France | The formation of compact objects at finite temperatures in a self-gravitating bosonic system (Slides) (Video) |
| Yongyong Cai Beijing Computational Science Research Center, China | Ground states of Bose-Einstein condensates with higher order interaction |
| Marco Caliarì Università Degli Studi di Verona, Italy | A free boundary approach to Gross-Pitaevski equations (Slides) |
| Ricardo Carretero San Diego State University, USA | Reduction dynamics for soliton stripes, vortices, and vortex rings in quantum superfluids (Slides) (Video) |
| Albert Chern Technische Universität Berlin, Germany | Incompressible Schrödinger and Ginzburg—Landau systems in computer graphics |
| Ionut Danaila University of Rouen Normandy, France | Finite-element tools for the 2D/3D simulation of phase-change materials (Slides) |
| Yue Feng National University of Singapore, Singapore | Uniform error bounds of an exponential wave integrator Fourier pseudospectral method for the long time dynamics of the nonlinear Klein Gordon equation (Slides) |
| Yichen Guo National University of Singapore, Singapore | Uniform error estimate of a nested Picard integrator Fourier pseudospectral method for the nonlinear Schrödinger equation with wave operator (Slides) |
| Ahmad A. Hujeriat Universität Heidelberg, Germany | Glitching pulsars: probing the interaction of incompressible quantum superfluids with compressible dissipative nuclear fluids under strong gravitational fields |

| Name & Affiliation | Talk Title |
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| Dieter Jaksch University of Oxford, UK | Variational quantum algorithms for nonlinear problems (Slides) (Video) |
| Qianxiao Li National University of Singapore, Singapore | A dynamical systems approach to deep learning: optimization, approximation and beyond |
| Bo Lin National University of Singapore, Singapore | An efficient and accurate parallel simulator for streamer discharges in three (Slides) |
| Francky Luddens University of Rouen Normandy, France | Quantum turbulence exploration using the Gross-Pitaevskii equation (Slides) |
| Peter A. Markowich King Abdullah University of Science and Technology, Saudi Arabia | Continuum Models of Transportation Networks with Differential Equations (Slides) (Video) |
| Christian Miniatura National University of Singapore, Singapore | Matter waves in disordered potentials: from localization to thermalization and condensation (Slides) |
| Dario Poletti Singapore University of Technology and Design, Singapore | Relaxation dynamics of many-body open quantum systems |
| Bartosz Protas McMaster University, Canada | Extreme vortex states and the hydrodynamic blowup problem (Slides) |
| Nick Proukakis Newcastle University, UK | Dynamical modelling of phase transitions |
| Han Pu Rice University, USA | Generating synthetic spin-orbit coupling in cold atoms using periodic driving (Slides) (Video) |
| Mirza Satriawan Universitas Gadjah Mada, Indonesia | Dark matters from particles with unusual statistics (Slides) (Video) |
| Jesus Sierra University of Vienna, Austria | On a dissipative Gross-Pitaevskii-type model for exciton-polariton condensates (Slides) |
| Zhigang Sun Chinese Academy of Sciences, China | Recent development of state-to-state quantum reactive scattering theory (Slides) |
| Qinglin Tang Sichuan University, China | Computing ground states of spin 2 Bose-Einstein condensates by the normalized gradient flow (Slides) |
| Haizhao Yang Purdue University, USA | Fast algorithms for deep learning based PDE solvers (Slides) |