

Three days on Mathematical Models of Quantum Fluids (Geometrical, Analytical and Computational Aspects)

Monday, September 14

14:30 Opening

Chair Marco Caliari

15:00–16:00 Weizhu Bao, National University of Singapore (Singapore), *Quantized vortex stability and dynamics in superfluidity and superconductivity*

16:00–16:30 Coffee break

16:30–17:30 Makoto Tsubota, Osaka City University (Japan), *Quantum turbulence: From superfluid helium to atomic Bose–Einstein condensates*

17:30–18:00 Mechthild Thalhammer, University of Innsbruck (Austria), *High-order time-splitting spectral methods for Gross–Pitaevskii systems*

Tuesday, September 15

9:30–11:00 Round table on numerical aspects and short communications (Chair Marco Caliari):

Christof Neuhauser, University of Innsbruck (Austria), *Convergence of high-order time-splitting pseudospectral methods for Schrödinger equations*

Marco Caliari, University of Verona (Italy), *Spectral methods for dissipative nonlinear Schrödinger equations*

Discussion on open problems

11:00–11:30 Coffee break

Chair Laura Morato

11:30–12:30 Mauro Spera, University of Verona (Italy), *Differential geometric aspects of quantum vortex theory*

12:30–14:30 Lunch

14:30–15:30 Renzo Ricca, University of Milano Bicocca (Italy), *Vortex dynamics by geometric and structural complexity analysis*

15:30–16:00 Coffee break

16:00–17:00 Michele Correggi, University of Trento (Italy), *Vortices in Rotating Bose–Einstein Condensates*

18:00–20:00 Visit of Verona

20:15 Conference dinner

Wednesday, September 16

Chair Sisto Baldo

9:30–10:00 Luca Salasnich, University of Padua (Italy), *Generalized superfluid hydrodynamics for the unitary Fermi gas*

10:00–11:00 Round table on geometric aspects (details to be announced, Chair Mauro Spera)

11:00–11:30 Coffee break

Chair Sisto Baldo

11:30–12:30 Carlo Barenghi, Newcastle University (United Kingdom), *Turbulence in superfluid helium and atomic condensates: classical and quantum aspects*

12:30–14:30 Lunch

14:30–15:30 (Department seminar) Mario Rasetti, Politecnico di Torino (Italy), *New frontiers for quantum information processing: from topological invariants to the theory of formal languages*

15:30–16:00 Coffee break

16:00–17:00 Peter Mason, Ècole Polytechnique (France), *The effect of the trapping potential on the behaviour of a fast rotating condensate*

17:00–18:00 Round table on vortex formation (details to be announced, Chair Laura Morato)

Thursday, September 17

Chair Mauro Spera

9:30–10:00 Francesca Maggioni, University of Bergamo (Italy), *On vortex knots and unknots*

10:00–11:00 Sisto Baldo, University of Verona (Italy), *Γ -convergence of the Ginzburg–Landau functionals and applications to superconductivity and B.E.C.*

11:00–11:30 Coffee break

11:30–12:30 Round table on analytic aspects (details to be announced, Chair Sisto Baldo)

12:30 Closure