

Workshop on

**“Quantum Many-body Systems and Bose-Einstein Condensation:
A Mathematical Physics Perspective”**

November 24 - 28, 2025

organized by

**Serena Cenatiempo (Gran Sasso Science Institute, L'Aquila), Christian Hainzl (LMU Munich),
Robert Seiringer (ISTA, Klosterneuburg)**• **Monday, November 24th, 2025**09:00 – 09:30 **Registration & Welcome**09:30 – 10:30 **Jan Philip Solovej (U of Copenhagen)***Seventy Years of the Mathematical Physics of the Bose Gas*10:30 – 11:00 **Coffee Break**11:00 – 11:40 **Benjamin Schlein (U Zurich)***Upper bound for Wu's correction to the ground state energy of a dilute Bose gas*11:45 – 12:25 **Arnaud Triay (LMU Munich)***The free energy of dilute Bose gases at low temperature*12:30 – 14:00 **Lunch Break**14:00 – 15:00 **Stefano Giorgini (U of Trento)***Exact solution of many-body problems using quantum Monte-Carlo: applications to ultracold atoms*15:00 – 15:30 **coffee break**15:30 – 16:10 **Andreas Deuchert (Virginia Tech)***Recent developments in the analysis of Bose gases at positive temperature.*16:15 – 16:55 **Valentin Zagrebnov (U Aix-Marseille)***About the observation of Bose-Einstein Condensation in Liquid 4^{He}* • **Tuesday, November 25th, 2025**09:00 – 09:40 **Bruno Nachtergaele (UC Davis)***The Charge Gap, the Neutral Gap, and Fractional Quantum Hall Systems.*09:45 – 10:25 **David Dereudre (U of Lille)***DLR Equations for the Superstable Bose Gas at any Temperature and Activity*10:30 – 11:00 **coffee break**11:00 – 11:40 **Soren Fournais (U of Copenhagen)***Tunnelling formulae for magnetic operators*11:45 – 12:25 **Emanuela L. Giacomelli (U Milan)***The Huang-Yang-conjecture for the low density Fermi gas*12:30 – 14:00 **Lunch break**

14:00 – 14:40 **Teun van Nuland (Technical U Delft)**

TBA

14:45 – 15:25 **Jan Derezinski (U Warsaw)**

Damping of phonons at low temperature

15:30 – 16:00 **coffee break**

- **Wednesday, November 26th, 2025**

09:00 – 09:40 **Mathieu Lewin (U Paris-Dauphine)**

Gross-Pitaevskii equation for supersolids

09:45 – 10:25 **Christian Brennecke (U Bonn)**

BEC with optimal rate in the Gross-Pitaevskii Limit

10:30 – 11:00 **coffee break**

11:00 – 11:40 **Cristina Caraci (U of Geneva)**

Euclidean field theories as limit of interacting Bose gases

11:45 – 12:25 **Phan Thanh Nam (LMU Munich)**

Derivation of Φ_3^4 theory from many-body quantum mechanics

12:30 – 14:00 **Lunch break**

14:00 – 14:40 **Simone Rademacher (LMU Munich)**

Long-time validity of Bogoliubov theory

14:45 – 15:25 **Alessandro Olgiati (Politecnico Milano)**

Third order correction to the ground state energy of a Bose gas in the Gross-Pitaevskii regime

15:30 – 16:00 **coffee break**

16:00 – 17:00 **Rupert Frank (LMU Munich)**

Stability of matter: The 50th anniversary of the Lieb–Thirring proof

- **Thursday, November 27th, 2025**

09:00 – 09:40 **Jean-Bernard Bru (U Basque Country)**

Exchange Interactions and Cuprate Superconductivity

09:45 – 10:25 **Tanja Rindler-Daller (U of Vienna)**

Truly macroscopic quantum systems: dark matter as Bose-Einstein condensates

10:30 – 11:00 **coffee break**

11:00 – 11:40 **Morris Brooks (U Zurich)**

The effective mass of the Fröhlich polaron at strong coupling

11:45 – 12:25 **Chiara Saffirio (U of Basel)**

Semiclassical analysis of mean-field type equations

12:30 – 14:00 **Lunch break**

14:00 – 14:40 **Michele Correggi (Politecnico di Milano)**

TBA

14:45 – 15:25 **Lukas Junge (U of Copenhagen)**

TBA

15:30 – 16:00 **coffee break**

16:00 – 17:00 **Francesca Ferlaino (U of Innsbruck)**

TBA

- **Friday, November 28th, 2025**

09:00 – 09:40 **Nicolas Rougerie (ENS de Lyon)**

Hartree and magnetic Thomas-Fermi approximations for 2D anyons

09:45 – 10:25 **Peter Pickl (U Tübingen)**

Impurities in the Fermi-Gas

10:30 – 11:00 **coffee break**

11:00 – 11:40 **Ian Jauslin (Rutgers U)**

Non-perturbative behavior of interacting Bosons at intermediate densities

11:45 – 12:25 **Alessandro Giuliani (U Roma III)**

Universality of the topological phase transition in the interacting Haldane model

All talks take place at ESI Boltzmann Lecture Hall!