

# Density Functionals for Many-Particle Systems: Mathematical Theory and Physical Applications of Effective Equations

Partially supported by Julian Schwinger Foundation  
Session 1 (2-6 Sep 2019), Coordinators: Li Chen and Sergei Manzhos

## Monday, 02 September 2019

Time	Title
0930 - 0945	Registration
0945 - 1000	Opening Remarks
1000 - 1045	Introduction by Session Co-ordinators
1045 - 1100	Coffee break
1100 - 1200	Paul Ayers: Convexity in Density Functional Theory
1200 - 1335	H. Siedentop: Tutorial on Mathematics of density functionals
1335 - 1340	Group Photo
1340 - 1500	Lunch break
1500 - 1600	Piotr Grochowski: Dynamics of a two-component Fermi gas
1600 - 1630	Coffee Break
1630 - 1730	RG1 Ultracold Fermi gases: How to model collisionless to hydrodynamic crossover in the dynamics of a two-component Fermi gas? [K. Rzażewski, P. Grochowski]  RG2 Ultracold Fermi gases: How to model dynamical creation of paired dimers in two-component Fermi gas? [K. Rzażewski, P. Grochowski]

## Tuesday, 03 September 2019

Time	Title
0930 - 0945	Registration
0945 - 1045	Sergei Manzhos: Rectangular collocation for solution of the Schrödinger equation
1045 - 1100	Coffee break
1100 - 1200	Kaoru Ohno: extended quasiparticle theory and its applications
1200 - 1330	Lunch break
1330 - 1430	Tobias Ried: Entropy decay for the Kac evolution
1430 - 1530	Li Chen: Combined mean field and semiclassical limit for many body Schrödinger for Fermions
1530 - 1600	Coffee Break
1600 - 1700	Leading Discussion by Melvyn Levy

**Wednesday, 04 September 2019**

Time	Title
0930 - 0945	Registration
0945 - 1045	Jerzy Ciosłowski: Universalities among natural orbitals and occupation numbers pertaining to ground states of two electrons in central potentials
1045 - 1100	Coffee break
1100 - 1200	C: Universalities among natural orbitals; differential equations for natural orbitals; do those carry over to KS orbitals? [Jerzy Ciosłowski]
1200 - 1330	Lunch Reception at IMS
1330 - 1930	Social event to Pulau Ubin 2-way transfer from IMS

**Thursday, 05 September 2019**

Time	Title
0930 - 0945	Registration
0945 - 1045	<i>Distinguished Visitor Lecture Series</i> Melvyn Levy: Coordinate Scaling Constraints in Density and Density- Matrix Functional Theories
1045 - 1100	Coffee break
1100 - 1200	Karsten Held: $\pi$ -tons --- the generic optical excitations of correlated systems
1200 - 1335	C. Witt: Tutorial on Kinetic energy density functionals
1335 - 1430	Lunch break
1430 - 1530	Frank Lechermann: Combining density functional theory, self-interaction correction and dynamical mean-field theory: DFT+sicDMFT
1530 - 1600	Coffee Break
1600 - 1700	Leading Discussion by Karsten Held

**Friday, 06 September 2019**

Time	Title
0930 - 0945	Registration
0945 - 1045	Melvyn Levy: Total energies as simple sums of orbital energies
1045 - 1100	Coffee break
1100 - 1200	Leading Discussion by Melvyn Levy
1200 - 1400	Lunch break
1400 - 1500	Discussion