Program

(JST = UTC + 9)

07 December 2022 (Wed)

Introduction of Nuclear DFT — (Chair: Tomoya Naito)

13:20–13:30 **Tomoya Naito** (RIKEN iTHEMS/U. Tokyo)
Opening

13:30–15:00 **Nobuo Hinohara** (U. Tsukuba)
Recent progress in nuclear DFT

08 December 2022 (Thu)

Time-Dependent Density Functional Theory I — (Chair: Shunsuke A. Sato)

10:30–12:00 **Kazuyuki Sekizawa** (Tokyo Tech)
Nuclear TDDFT: Past, Present, and Future

Time-Dependent Density Functional Theory II — (Chair: Kazuyuki Sekizawa)

13:30–15:00 **Takashi Nakatsukasa** (U. Tsukuba)
Requantizing the time-dependent density functional dynamics

09 December 2022 (Fri)

Many-Body Theoretical Methods I — (Chair: Osamu Sugino)

10:30–12:00 **Gianluca Colò** (U. Milan/INFN Milano/YITP, Kyoto U.)
Many-body correlations and EDF-based nuclear models

Many-Body Theoretical Methods II — (Chair: Takashi Nakatsukasa)

13:30–15:00 **Osamu Sugino** (Institute for Solid State Physics, U. Tokyo)
Many-body Green's Function and Density Functional Theory for Condensed Matters

12 December 2022 (Mon)

One-Day Workshop (15 min. talk & 5 min. discussion) (Chair: Kenichi Yoshida)

10:20–10:40 **Qiang Zhao** (Center for Exotic Nuclear Studies, Institute of Basic Science)
(Online) Covariant Density Functional Theory with Localized Exchange Terms

10:40–11:00 **Hiroyuki Tajima** (U. Tokyo)
(Online) Towards universal energy density functionals of non-relativistic spin-1/2 Fermi gases

11:00–11:20 **Yusuke Tanimura** (Tohoku U.)
Visualization of nuclear many-body correlations with the most probable nucleon arrangement

11:20–11:40 **Mitsuaki Kawamura** (Institute for Solid State Physics, U. Tokyo)
Benchmark and application of density functional theory for superconductors

11:40–12:00 **Kai Wen** (U. Tsukuba)
Collective coordinates and collective inertial masses for nuclear reactions

One-Day Workshop (15 min. talk & 5 min. discussion) (Chair: Gianluca Colò)

13:30–13:50 **Kenta Yoshimura** (Tokyo Tech)
Time-Dependent Band Theory for the Inner Crust of Neutron Stars: Extension to Include Superfluidity

13:50–14:10 **Tomohiro Oishi** (Yukawa Institute for Theoretical Physics, Kyoto U.)
Magnetic excitations based on the relativistic energy-density functional theory

14:10–14:30 **Tomohito Amano** (U. Tokyo)
First-principles study of lattice dielectric function in rutile TiO_2

14:30–14:50 **Moemi Matsumoto** (Tohoku U.)
Generator coordinate method with variational basis generation

14:50–15:10 **Akira Ohnishi** (Yukawa Institute for Theoretical Physics, Kyoto U.)
Density dependence of Λ potential in nuclear matter from heavy-ion collisions and hypernuclear spectroscopy

One-Day Workshop (15 min. talk & 5 min. discussion) (Chair: Takeru Yokota)

15:40–16:00 **Hiroyuki Sagawa** (U. Aizu/RIKEN RNC)
Beyond mean field approach for nuclear excitations and decays

16:00–16:20 **Shunsuke Yamada** (National Institutes for Quantum Science and Technology)
Ab initio TDDFT study of high-harmonic generation from dielectric thin films

16:20–16:40 **Kenichi Yoshida** (Kyoto U.)
Linear-response TDDFT for rotating nuclei

16:40–17:00 **Kohei Washiyama** (U. Tsukuba)
Large-amplitude collective dynamics with collective Hamiltonian derived from nuclear DFT + local QRPA

17:00–17:20 **William Dawson** (RIKEN R-CCS)
Density functional theory calculations of large systems:
Interplay between fragments, observables, and computational complexity

17:20–17:40 **Kotaro Uzawa** (Kyoto U.)
Microscopic description of induced fission based on the generator coordinate method

13 December 2022 (Tue)

Isospin Symmetry Breaking and Its Symmetry Restoration (Chair: Ryosuke Akashi)

10:30–12:00 **Koichi Sato** (Kochi U.)
Nuclear density functional calculations with proton-neutron mixing

Orbital-Free DFT and Machine Learning (Chair: Masahiro Fukuda)

13:30–15:00 **Fumihiro Imoto** (Schrödinger)
Recent Advances in Orbital-Free Density Functional Theory and Machine Learning Approaches to Develop Kinetic Energy Functionals

14 December 2022 (Wed)

Relativistic DFT (Chair: Koichi Sato)

10:30–12:00 **Yasuhiro Ikabata** (Toyohashi Tech)
Picture-change corrected density functional theory for relativistic quantum chemical calculations

15 December 2022 (Thu)

Construction of Energy Density Functional (Chair: Fumihiro Imoto)

10:30–12:00 **Tomoya Naito** (RIKEN iTHEMS/U. Tokyo)
Towards First-Principles Energy Density Functionals

Time-Dependent Density Functional Theory III (Chair: Nobuo Hinohara)

13:30–15:00 **Shunsuke A. Sato** (U. Tsukuba)
(Online) Application of real-time TDDFT simulation to nonlinear and nonequilibrium electron dynamics in matter

Discussion (Chair: Gianluca Colò)

15:30–17:00 Discussion (Novel ideas to build EDFs & Collective coordinates and/or full CI)

16 December 2022 (Fri)

Calculation Method of Local Physical Quantities (Chair: Takeru Yokota)

10:30–12:00 **Masahiro Fukuda** (Institute for Solid State Physics, U. Tokyo)
Local physical quantities based on quantum electrodynamics

Superconducting Density Functional Theory (Chair: Gianluca Colò)

13:30–15:00 **Ryosuke Akashi** (National Institutes for Quantum Science and Technology)
Development of density functional theory for superconductors: recent progress

19 December 2022 (Mon)

Machine Learning Approach (Chair: Kenichi Yoshida)

10:30–12:00 **Haozhao Liang** (U. Tokyo)
Quantum computing for nuclear structure properties?

12:00–12:10 **Kenichi Yoshida** (Kyoto U.)
Closing

20 December 2022 (Tue)

AM & PM Free Discussion