Recent Progress in Many-Body Theories (RPMBT22)

Monday 23 September 2024

Session: Opening (Chair: NAKATSUKASA, Takashi) - Kasuga Auditorium (09:50-11:00)

time	[id] title	presenter
09:50	[74] Welcome by Director of CCS	BOKU, Taisuke
09:55	[87] Welcome by IAC chair	ORTIZ, Gerardo
10:00	[42] Simulating dissipative quantum many-body dynamics via the time-dependent Variational Monte Carlo method	Prof. GALLI, Davide Emilio
10:30	[53] A fully-programmable universal quantum simulator using Floquet technology	Prof. NEMOTO, Kae

Session: Quantum information and computing (Chair: ORTIZ, Gerardo) - Kasuga Auditorium (11:30-12:25)

time	[id] title	presenter
11:30	[14] Quantum Computing for Nuclear Physics	ROGGERO, Alessandro
12:00	[30] Simple many-body dynamics is a powerful quantum reservoir	SAKURAI, Akitada

Session: Computational many-body physics (Chair: NEILSON, David) - Kasuga Auditorium (14:00-15:20)

time	[id] title	presenter
14:00	[1] Approximating Many-Electron Wave Functions using Neural Networks	Prof. FOULKES, Matthew
14:30	[54] Exact Field Induced Ground States of the Quantum Compass Model	SORENSEN, Erik
14:55	[16] Spin-S Kitaev-Heisenberg model on the honeycomb lattice: A high-order treatment of its phase diagram via the coupled cluster method	BISHOP, Raymond

Session: Quantum fluids and ultracold gases (Chair: GALLI, Davide Emilio) - Kasuga Auditorium (15:50-17:15)

time	[id] title	presenter
15:50	[24] Neural-network quantum states for ultra-cold Fermi gases	Dr KIM, Jane
16:20	[70] From ground state energies towards excitations for extended quantum systems	HOLZMANN, Markus
16:50	[48] Boson-fermion pairing in resonant Bose-Fermi mixtures	PIERI, Pierbiagio

Tuesday 24 September 2024

Session: Computational many-body physics (Chair: MIYAGI, Takayuki) - Kasuga Auditorium (09:00-10:25)

time	[id] title	presenter
09:00	[66] How to describe all nuclei at polynomial cost in the ab initio framework	Dr SOMÀ, Vittorio
09:30	[68] Surrogate models for quantum many-body systems	YOSHIDA, Sota
10:00	[55] A Comparison of Methods for Simulating Quantum Dot Dynamics	FLATEN, Jonas

Session: Condensed matter physics (Chair: HATSUGAI, Yasuhiro) - Kasuga Auditorium (10:55-12:20)

time	[id] title	presenter
10:55	[71] Theoretical Modeling of Ultrafast Phase Transitions from the Femtosecond to the Picosecond Scale	Prof. CALANDRA, Matteo
11:25	[111] Ab initio structural optimization at finite temperatures based on anharmonic phonon theory	Prof. RYOTARO, Arita
11:55	[11] Understanding correlated d- and f-electron systems using DFT and eDMFT methods	Prof. QUADER, Khandker

Session: New frontiers (Chair: DAS, Bhanu) - Kasuga Auditorium (14:00-15:20)

time	[id] title	presenter
14:00	[37] Pseudomodes: from solving the spin-boson model to finding ground states	LAMBERT, Neill
14:30	[41] Recent advances in understanding the sign problem in path integral Monte Carlo simulation of harmonic fermions	Prof. CHIN, SIU
14:55	[17] Decoherence of a qubit interacting with a complex spin bath	SHITARA, Nanako

Session: Nuclear physics (Chair: KIMURA, Masaaki) - Kasuga Auditorium (15:50-17:10)

time	[id] title	presenter
15:50	[25] Recent advances in ab initio calculations of heavy nuclei	MIYAGI, Takayuki
16:20	[28] BCS-BEC crossover in nuclear matter and related systems	Prof. SEDRAKIAN, Armen
16:45	[13] Self-consistent single-nucleon potential describing nuclear structure to intermediate-energy scattering	NAKADA, Hitoshi

Session: Poster indexing (Chair: KIMURA, Masaaki) - Kasuga Auditorium (17:10-17:30)

time	[id] title	presenter
17:10	[89] [Indexing] Self-consistent renormalization theory of anisotropic spin fluctuations in nearly ferromagnetic metals	Prof. KONNO, Rikio
17:12	[91] [Indexing] Variational method with an explicit energy functional for symmetric nuclear matter taking into account the spin-orbit force	OSUKA, Toshiya
17:13	[92] [Indexing] Variational method with an explicit energy functional for neutron matter at finite temperature taking into account the spin-orbit force	KITANAKA, Kento

17:14	[93] [Indexing] Shape fluctuation in low-lying states in $N \approx 40$ neutron-rich nuclei	WASHIYAMA, Kouhei
17:15	[95] [Indexing] Nuclear structure study using a hybrid approach of shell model and Gogny-type density functionals	YOSHINAGA, Kota
17:16	[96] [Indexing] The rotational mode caused by the pair condensation in nuclei	RUIKE, Chisato
17:17	[97] [Indexing] Superfluid Band Theory for the Neutron Star Inner Crust	YOSHIMURA, Kenta
17:18	[98] [Indexing] Large-scale shell model study of $\mathbf{\beta^-}$-decay properties of $\mathbf {N=126, 125}$ nuclei along the r-process path	KUMAR, Anil
17:19	[99] [Indexing] Double beta decay phase space factor calculation using Coulomb potential calculated by mean field calculation	KANAI, Atsuya
17:20	[100] [Indexing] Evolution of chirality in the electron-positron pair production driven by photons	YU, Chengpeng
17:21	[101] [Indexing] Automatic Structural Search of Tensor Network States including Entanglement Renormalization	WATANABE, Ryo
17:22	[102] [Indexing] Effect of the Coulomb interaction on nuclear deformation and drip lines	Mr HAGIHARA, Kenta
17:23	[103] [Indexing] Coulomb interaction-driven entanglement of electrons on helium	LEINONEN, Oskar
17:24	[104] [Indexing] The impact of connectivity in qubit networks and the symmetry in the XY model on the quantum machine learning’s performance	Mr HAYASHI, Aoi
17:25	[105] [Indexing] A Theoretical Study on Spin-Filter Effect in Layered Materials	Mr INOUE, Jin
17:27	[107] [Indexing] Accurate relativistic exchange energy functional for atomic nuclei	Dr ZHAO, QIANG

Wednesday 25 September 2024

Session: Quantum chemistry, atomic and molecular physics (Chair: BISHOP, Raymond) - Kasuga Auditorium (09:20-10:40)

time	[id] title	presenter
09:20	[64] Quantum computations of relativistic and many-body effects in atomic and molecular systems based on variational algorithms	Prof. DAS, Bhanu
09:50	[67] New Analytical Representation for Electronic Terms of Nuclear Schiff Moment	Dr ABE, Minori

Session: Computational many-body physics (Chair: CHIN, SIU) - Kasuga Auditorium (10:55-12:20)

time	[id] title	presenter
10:55	[73] Tensor networks and new classical heuristics	CHAN, Garnet Kin-Lic
11:25	[43] Tensor network toward the lattice QCD	AKIYAMA, Shinichiro
11:55	[57] Overcoming Fermionic Sign Problem in Lattice Quantum Monte Carlo: A Cuprate Case	LICHTENSTEIN, Alexander

Thursday 26 September 2024

Session: Quantum information and computing (Chair: YUNOKI, Seiji) - Kasuga Auditorium (09:00-10:30)

time	[id] title	presenter
09:00	[65] Continuous-variable optimization: quantum vs classical	Prof. NISHIMORI, Hidetoshi
09:30	[69] Quantum many-body scars in dual-unitary circuits	DOOLEY, Shane
10:00	[112] Quantum many-body dynamics in digital quantum computers	YUNOKI, Seiji

Session: Condensed matter physics (Chair: ARITA, Ryotaro) - Kasuga Auditorium (11:00-12:20)

time	[id] title	presenter
11:00	[36] Chester supersolid in dipolar interlayer exciton condensates	Dr CONTI, Sara
11:30	[58] Avalanche Instability as Nonequilibrium Quantum Criticality	HAN, Jong
11:55	[2] In Search of an Organizing Principle for Quantum Hall Systems	Prof. ORTIZ, Gerardo

Session: Non-equilibrium many-body phenomena (Chair: HAN, Jong) - Kasuga Auditorium (14:00-14:55)

time	[id] title	presenter
14:00	[3] Quasi-steady state descriptions for photo-doped Mott insulators	Dr MURAKAMI, Yuta
14:30	[35] Electron-phonon coupling effect on the vibrational relaxation of CO on Pd(111)	BOMBÍN ESCUDERO, Raúl

Friday 27 September 2024

Session: Quantum fluids and cold atoms (Chair: BORONAT, Jordi) - Kasuga Auditorium (09:00-10:20)

time	[id] title	presenter
09:00	[60] Bose mixtures at finite temperature: magnetism and condensation phenomena	GIORGINI, Stefano
09:30	[23] Vortices in a dipolar superfluid of interlayer excitons in bilayer semiconductors	Prof. NEILSON, David
09:55	[39] The two body density matrix of a Tomonaga Luttinger liquid	Prof. DEL MAESTRO, Adrian

Session: Nuclear and computational many-body physics (Chair: SEDRAKIAN, Armen) - Kasuga Auditorium (10:50-12:40)

time	[id] title	presenter
10:50	[29] Variational Theory and Parquet Diagrams for Nuclear Systems: A Comprehensive Study of Neutron Matter	Prof. KROTSCHECK, Eckhard
11:20	[12] An application of the shift-invert Lanczos method to the non-equilibrium Green's function method	UZAWA, Kotaro
11:45	[45] A novel method for extracting and emulating continuum physics of finite quantum systems	ZHANG, Xilin
12:10	[113] Closing	