

The 50th Reimei Workshop
**“Universal Physics in Many-Body Quantum Systems:
From Atoms to Quarks”**

Ibaraki Quantum Beam Research Center (IQBRC)
December 12-14, 2018

Program

Host

Advanced Science Research Center, Japan Atomic Energy Agency (JAEA)

Supported by

Research Center for Nuclear Physics (RCNP), Osaka University

Clustering as a window on the hierarchical structure of quantum systems (Grant-in-Aid for Scientific Research on Innovative Areas)

December 12

Venue: Multipurpose Hall (2nd Floor), Ibaraki Quantum Beam Research Center

9:30–9:40 Makoto Oka (JAEA)
Greetings

Session 1 Chairperson: Makoto Oka

9:40–10:20 Hans-Werner Hammer (TU Darmstadt)
When the tail wags the dog: universality in the strong interaction limit

10:20–10:55 Atsushi Hosaka (Osaka)
Clusters in hadron physics

Coffee break (10:55-11:15)

Session 2 Chairperson: Yutaka Utsuno

11:15–11:50 Jie Meng (Peking)
Chirality in nucleus: recent progress

11:50–12:25 Ki-Seok Kim (POSTECH)
A non-perturbative field theory approach for the Kondo effect in the large N limit: Emergence of an extra dimension and its implication for the holographic duality conjecture

Lunch (12:25-13:45)

Session 3 Chairperson: Jun'ichi Ieda

13:45–14:20 Hai Pham (Tokyo Tech)
Giant spin Hall effect in BiSb topological insulator

14:20–14:55 Hiroko Tokoro (Tsukuba)
Thermal functionality on bistable material

14:55–15:30 Takami Tohyama (Tokyo U Sci)
Spin Clusters in Inorganic and Biological Materials

Coffee break and Group photo (15:30-15:45)

Session 4 Chairperson: Emiko Hiyama

15:45–16:20 Shimpei Endo (Tohoku)
Universal few-body physics in cold atoms

16:20–16:55 Tetsuo Hyodo (Kyoto)
Compositeness of hadrons from effective field theory

16:55–17:30 Takayasu Sekihara (JAEA)
A new form of atomic nuclei with antikaon: $\bar{K}NN$ bound state

December 13

Venue: Multipurpose Hall (2nd Floor), Ibaraki Quantum Beam Research Center

Session 5 Chairperson: Hans-Werner Hammer

- 9:30–10:05 Mario Gattobigio (Nice)
1/2 spin-isospin fermions close to the unitary limit
- 10:05–10:40 Munekazu Horikoshi (Tokyo)
Cold atom experiments for exploring universal quantum many-body physics
- 10:40–11:15 Michiyasu Mori (JAEA)
Phonon Hall effect by extended cluster multipoles

Coffee break (11:15-11:35)

Session 6 Chairperson: Atsushi Hosaka

- 11:35–12:10 Hyun-Chul Kim (Inha/JAEA)
Electromagnetic form factors of the light and heavy baryons
- 12:10–12:45 Artem Volosniev (TU Darmstadt)
Engineering beams of cold atoms to probe the behavior of impurities of a Bose gas

Lunch (12:45-13:45)

Session 7 Chairperson: Hirokazu Tamura

- 13:45–14:20 Emiko Hiyama (Kyushu)
Structure of light hypernuclei
- 14:20–14:55 Masayuki Matsuo (Niigata)
Neutron pairing: from drip-line to neutron star inner crust
- 14:55–15:30 Kouichi Hagino (Tohoku)
Di-neutron correlation in light neutron-rich nuclei

Coffee break and Group photo (15:30-15:50)

Session 8

Poster Session (15:50–17:20)

Party (17:30-19:30)

December 14

Venue: Multipurpose Hall (2nd Floor), Ibaraki Quantum Beam Research Center

Session 9 Chairperson: Philipp Gubler

9:30–10:05 Gastao Krein (Estadual Paulista)
Origin of proton mass and nuclear-bound quarkonium

10:05–10:40 Shigehiro Yasui (Keio)
The Kondo effects for heavy quarks and hadrons

10:40–11:15 Kenji Fukushima (Tokyo)
Diquarks in hadrons and matter

Coffee break (11:15-11:35)

Session 10 Chairperson: Michiyasu Mori

11:35–12:10 Yusuke Nishida (Tokyo Tech)
Novel few-body universality and many-body crossover physics

12:10–12:45 Kazuhiro Yabana (Tsukuba)
First-principle simulations for extreme light-matter interaction

Lunch (12:45-14:05)

Session 11 Chairperson: Hiroyuki Koura

14:05–14:40 Yasuro Funaki (Kanto Gakuin)
Alpha condensates and container evolution in nuclear cluster formation

14:40–15:15 Takashi Abe (Tokyo)
Alpha-cluster structure from no-core Monte Carlo shell model

15:15–15:50 Yutaka Utsuno (JAEA)
Shell evolution in neutron-rich nuclei

15:50–16:10 Makoto Oka (JAEA)
Summary