

# Frontier Issues in Physics of Exotic Nuclei (YKIS2011)

## Scientific Program

**Tuesday 11<sup>th</sup> Oct.**

Registration (8:00-)

Session I (9:20-10:50) [Chair: J. Dobaczewski (Warsaw)]

T. Kugo (YITP) and M. Matsuo (Niigata) [10]

Opening Address

T. Otsuka (Tokyo) [30]

Structural evolution of exotic nuclei driven by nuclear forces

G. Hagen (Oak Ridge) [30]

Towards a unified description of nuclear structure and reactions with coupled-cluster theory

V. Lapoux (CEA-Saclay) [20]

Spectroscopy of the unbound states of the drip-line nucleus  $^{24}\text{O}$

*Coffee Break*

Session II (11:20-12:50) [Chair: T. Nakatsukasa (RIKEN)]

P. Navratil (TRIUMF) [30]

Ab initio calculations of light-ion reactions

W. Horiuchi (RIKEN) [20]

Nuclear reactions with a realistic nuclear interaction using a square integrable basis

R. Roth (Darmstadt) [20]

Ab-Initio Nuclear Structure Theory with Chiral Two- plus Three-Nucleon Interactions

J. D. Holt (Tennessee) [20]

Three-Nucleon Forces and the Evolution of Nuclear Structure in Exotic Nuclei

*Lunch*

Session III (14:10-15:30) [Chair: W. Nazarewicz (Tennessee)]

N. Aoi (RCNP) [30]

Structure study of neutron-rich nuclei by gamma-ray measurement at RIBF

D. Vretenar (Zagreb) [30]

Relativistic Nuclear Energy Density Functionals: Mean-Field and Beyond

H. Watanabe (RIKEN) [20]

Prolate-oblate shape coexistence and enhanced  $\gamma$ -softness in neutron-rich Nb and Mo isotopes with  $A \sim 110$

*Coffee Break*

Session IV (16:00-17:40) [Chair: T. Motobayashi (RIKEN)]

T. Uesaka (RIKEN) [30]

RI-beam Induced Charge Exchange Reactions -New Usage of RI-beams-

K. Yoshida (Niigata) [30]

Collective excitation in exotic nuclei

A. Tamii (RCNP) [20]

Complete Dipole Response in  $^{208}\text{Pb}$

J. Margueron (Orsay) [20]

Extended Skyrme interaction in the spin channel

*Get Together* (17:40-)

**Wednesday 12<sup>th</sup> Oct.**

Session V (9:00-10:40) [Chair: H. Horiuchi (RCNP)]

M. Kimura (Hokkaido) [30]

Clustering aspects in highly excited states and neutron-rich nuclei

G. V. Rogachev (Florida) [30]

Clustering phenomena in light non-self-conjugate nuclei

N. Itagaki (YITP) [20]

Simplified modeling of cluster-shell competition and appearance of various cluster structures in light nuclei

T. Kawabata (Kyoto) [20]

Search for alpha condensed states in  $^{24}\text{Mg}$

*Coffee Break*

Session VI (11:10-12:50) [Chair: J. A. Tostevin (Surrey)]

K. Ogata (RCNP) [30]

Recent development of CDCC and future

T. Myo (Osaka Tech) [30]

Resonances and Continuum States of Drip-Line Nuclei Using the Complex Scaling Method

T. Aumann (TU Darmstadt/GSI) [20]

Quasi-Free knockout reactions in inverse kinematics at R3B

T. Furumoto (YITP) [20]

Dynamical evolution of heavy-ion scattering in the high-energy region

*Lunch*

Session VII (14:10-15:40) [Chair: K. Matsuyanagi (RIKEN)]

E. Vigezzi (Milan) [30]

Interweaving of single-particle and vibrational degrees of freedom and nuclear superfluidity

M. Ploszajczak (GANIL) [20]

Recent Progress in the Description of Drip Line Nuclei Using the Shell Model in the Complex Energy Plane

H. Sagawa (Aizu) [20]

Pairing correlations and anti-halo effect in weakly bound nuclei

D. Lacroix (GANIL) [20]

On the application of symmetry breaking and its restoration to treat pairing correlation in finite nuclei

*Coffee Break*

Session VIII (16:10-17:50) [Chair: K. Hagino (Tohoku)]

D. Ackermann (GSI) [30]

Superheavy elements - a probe for nuclear matter at the extremes

A. Andreyev (West of Scotland) [30]

Low-energy fission in proton-rich nuclei in the lead region

A. Astier (Orsay) [20]

High-spin states of  $^{212,213,214}\text{Po}$ : Probing the valence space beyond  $^{208}\text{Pb}$

T. Ichikawa (YITP) [20]

Smooth transition from sudden to adiabatic states in deep-subbarrier fusion reactions

**Thursday 13<sup>th</sup> Oct.**

Session IX (9:00-10:40) [Chair: T. Aumann (TU Darmstadt/GSI)]

J. A. Tostevin (Surrey) [30]

Direct reaction probes of nucleon single-particle states and correlations

T. Nakamura (Tokyo Tech) [30]

Neutron drip line nuclei probed by breakup reactions

Y. Kikuchi (RCNP) [20]

Binary subsystem correlations in Coulomb breakup reactions of two-neutron halo nuclei

M. Ito (Kansai) [20]

Studies of light neutron-excess systems from bounds to continuum

*Coffee Break*

Session X (11:10-12:50) [Chair: H. Sakurai (RIKEN)]

B. A. Brown (MSU) [30]

Properties of neutron-rich nuclei from oxygen to silicon

O. Sorlin (GANIL) [30]

Constraints on spin orbit and drip-line forces based on experimental results

Y. Utsuno (JAEA) [20]

Shell evolution around and beyond N=28 studied with a large-scale shell-model calculation

T. Shimoda (Osaka) [20]

Structure of Mg isotope studied through  $\beta$ -delayed decay of spin-polarized Na isotopes

*Symposium Photo*

*Lunch*

Parallel Session I (14:30-)

[Parallel Ia] (14:30-15:50) [Chair: D. Vretenar (Zagreb)]

S. Ebata (CNS) [20]

Cb-TDHF calculation for the low-lying E1 strength of heavy nuclei around r-process path

L.-G. Cao (Inst. Mod. Physics) [20]

Tensor correlations in nuclear matter and Finite nuclei

N. Hinohara (RIKEN) [20]

Microscopic analysis of shape coexistence/mixing and shape phase transition in neutron-rich nuclei around  $^{32}\text{Mg}$

Y. R. Shimizu (Kyushu) [20]

Efficient method for quantum number projection and its application to tetrahedral nuclear state

[Parallel Ib] (14:30-15:50) [Chair: Y. Sakuragi (Osaka City)]

W. Richter (iThemba) [20]

Calculation of rp-process rates in the sd shell via the nuclear shell model

S. Kubono (CNS) [20]

Alpha-Cluster Nature Dominance for the ( $\alpha$ ,p) Process in Explosive Hydrogen Burning

R. Shane (NSCL) [20]

Exploring correlations in exotic nuclei

K. Minomo (Kyushu) [20]

Deformation effect on reaction cross sections for neutron-rich Ne-isotopes

*Coffee Break*

Poster Session (16:20-18:30)

**Friday 14<sup>th</sup> Oct.**

Session XI (9:00-10:30) [Chair: T. Otsuka (Tokyo)]

W. Nazarewicz (Tennessee) [30]

Challenges in Computational Nuclear Structure

T. Inakura (RIKEN) [20]

Shell and neutron-skin effects on pygmy dipole resonances

H. Nakada (Chiba) [20]

Mean-Field and RPA Approaches to Stable and Unstable Nuclei with Semi-Realistic NN Interaction

J. Terasaki (Tsukuba) [20]

Testing Skyrme energy-density functionals with the QRPA in low-lying vibrational states of rare-earth nuclei

*Coffee Break*

Session XII (11:00-12:30) [Chair: K. Kato (Hokkaido)]

G. Martínez-Pinedo (GSI) [30]

Exotic nuclei in supernova evolution and nucleosynthesis

T. Suzuki (Nihon) [20]

Gamow-Teller Strengths in Ni Isotopes and Nuclear Weak Processes

T. Yamada (Kanto Gakuin) [20]

$\alpha$ - $\alpha$ - $t$  cluster structures and Hoyle-analogue states in  $^{11}\text{B}$

H. O. U. Fynbo (Aarhus) [20]

Complete kinematics measurement of the  $^{11}\text{B}+p \rightarrow 3\alpha$  reaction

*Lunch*

Session XIII (14:00-15:40) [Chair: T. Nakamura (Tokyo Tech)]

A. Jokinen (Jyvaskyla) [30]

Precise atomic mass measurements at JYFLTRAP for nuclear structure and astrophysics

H. Ueno (RIKEN) [30]

Spin-aligned radioactive-isotope beams through the two-step fragmentation and nuclear moments of aluminum isotopes

J. Meng (Peking) [20]

Magnetic Moment in Covariant Density Functional Theory

S. Naimi (Orsay) [20]

Probing the exotic nuclide frontier with the ISOLTRAP mass spectrometer

*Coffee Break*

Parallel Session II (16:10-)

[Parallel IIa] (16:10-17:30) [Chair: M. Yamagami (Aizu)]

F. Barranco (Sevilla) [20]

Dynamical model of  $^{11}\text{Li}$  and its experimental direct evidence

C. Qi (KTH) [20]

Spin-aligned neutron-proton pair mode in atomic nuclei

P. Finelli (Bologna) [20]

Applications of In-Medium Chiral Dynamics to Nuclear Structure

N. Tsunoda (Tokyo) [20]

Microscopic derivation of the effective interaction for the shell model in more than one major shell

[Parallel IIb] (16:10-17:30) [Chair: K. Yabana (Tsukuba)]

E. Ideguchi (CNS) [20]

Superdeformed Band in Asymmetric  $N>Z$  Nucleus,  $^{40}\text{Ar}$  and High-Spin States in  $A=30\sim 40$  Nuclei

Y. Taniguchi (RIKEN) [20]

Coexistence of rotational bands and  $\alpha$  cluster correlations in  $^{42}\text{Ca}$

Y. Funaki (RIKEN) [20]

Resonance states and alpha condensation in  $^{16}\text{O}$

Z. Ren (Nanjing) [20]

Systematic calculations on  $\alpha$ -decay branching ratios of heavy nuclei

*Party* (18:30-20:30)



**Saturday 15<sup>th</sup> Oct.**

Session XIV (9:00-10:40) [Chair: T. Kajino (NAOJ)]

C. J. Horowitz (Indiana) [30]

Neutron rich matter in the lab and in astrophysics

U. Garg (Norte Dame) [30]

The Asymmetry Term in Nuclear Incompressibility from Investigations of the Giant Monopole Resonance in the Sn and Cd isotopes

D. Rossi (GSI) [20]

Investigation of the Dipole Response in Exotic Nuclei - Experiments at the LAND-R<sup>3</sup>B Setup

H. Sotani (NAOJ) [20]

Probing the Pasta Structure of Neutron Stars

*Coffee Break*

Session XV (11:10-12:40) [Chair: D. Baye (ULB)]

H. Schatz (MSU) [30]

Astrophysical X-ray bursts and radioactive beams

M.-K. Cheoun (Soongsil) [20]

Neutrino-induced reactions with the nuclei in core collapsing supernovae

T. Neff (GSI) [20]

Nuclear Structure and Reactions for light Nuclei in the FMD approach

K. Arai (Nagaoka) [20]

Tensor force manifestations in ab initio study of the  ${}^2\text{H}(d,\gamma){}^4\text{He}$ ,  ${}^2\text{H}(d,p){}^3\text{H}$ , and  ${}^2\text{H}(d,n){}^3\text{He}$  reactions

*Closing Remarks (12:40-)*