10th International workshop on Quantum Phase Transitions in Nuclei and Many-Body Systems Dubrovnik, Croatia, July 11-15, 2022

PROGRAM

Monday morning, July 11, 08:30-09:30
08:30-09:30 Registration

Monday morning, July 11, 09:30-10:00
Welcome (D. Vretenar, A. Leviatan)

09:30-10:00 Opening Session
IACHELLO, Francesco (Yale) *Quantum phase transitions in nuclei and other systems* [25+5]

Monday morning, July 11, 10:00-13:30
Transitional nuclei and shape coexistence (J.E. Garcia-Ramos, K. Nomura)

10:00-11:30 Session
ZIELINSKA, Magda (CEA, Saclay), *Experimental fingerprints of shape coexistence* [20+5]
WERNER, Volker (Darmstadt) *The Shape-Phase Transition(s) in Zr isotopes* [15+5]
PAKARINEN, Janne (Jyvaskyla) *Competing structures in ^{186}Pb nucleus* [15+5]
OLAIZOLA, Bruno (CERN) *Shape coexistence in the n-deficient Hg isotopes* [15+5]

11:30-12:00 Coffee break

12:00-13:30 Session
KARAYONCHEV, Vasil (TRIUMF) *Tests of collectivity in ^{98}Zr by absolute transition rates* [15+5]
PASQUALATO, Giorgia (IJCLab, Saclay) *Shape evolution in neutron-rich nuclei around mass 100: lifetime measurements in Zr isotopes* [15+5]
GAVRIELOV, Noam (Yale) *Intertwined QPTs in the Zr isotopes* [15+5]
MAYA-BARBECHO, Esperanza (Huelva) *Shape coexistence in Strontium isotopes* [15+5]

13:30-15:00 Lunch

Monday afternoon, July 11, 15:00-19:00
Density functional and BMF approaches to QPTs (D. Vretenar, T. Niksic)

15:00-16:45 Session
RODRÍGUEZ FRUTOS, Tomas R. (Madrid) *QPTs in microscopic nuclear structure calculations* [25+5]
RING, Peter (München) *Beyond-mean-field approaches for nuclear neutrinoless double beta decay* [20+5]
KORTELAINEN, Markus (Jyvaskyla) *Nuclear charge radius predictions from DFT-based models* [20+5]
AFANASJEV, Anatoli, (Mississippi State Univ.) *Shape transitions triggered by the extremes of charge, isospin and angular momentum* [20+5]

16:45-17:15 Coffee break

17:15-19:00 Session
NIKSIC, Tamara, (Zagreb), *Coexistence of nuclear shape: mean-field and beyond* [15+5]
RODRÍGUEZ FRUTOS, Tomas R. (Madrid) *Shape coexistence with Gogny EDF: recent results* [15+5]
BUGANU, Petrica, (Bucharest) *Shape coexistence and mixing within the Bohr model* [15+5]
KARAKATSANIS, Konstantinos (Zagreb) *Shape transitions and low level structure in the Hg region within the relativistic density functional theory* [15+5]
LOTINA, Luka (Zagreb) *Microscopic description of octupole deformations and collective excitations in even–even Xe and Ba isotopes* [15+5]

WELCOME RECEPTION at the Conference Venue, Inter-University Center

Tuesday morning July 12, 09:00-13:30
Empirical Aspects of QPTs (N. Pietralla, R.F. Casten)

09:00-11:00 Session
PIETRALLA, Norbert (Darmstadt) *Aspects of "Empirical Aspects"* [15+5]
GARRETT, Paul Edward (Guelph) *Nuclei with multiple shape coexistence* [20+10]
BEUSCHLEIN, Maike (Darmstadt) *Investigation of the B(E2; $0^+_1 \rightarrow 2^+_1$) value of ^{116}Sn* [8+7]
MAHESHWARI, Bhoomika (Zagreb) *Evolution of nuclear structure in and around semi-magic nuclei* [15+5]
STETZ, Tim (Darmstadt) *M1 Transition strength of the mixed-symmetry 2+ state of ^{132}Te* [8+7]
WERNER, Volker (Darmstadt) *Boundaries of the QPT and evolution of deformation in rare earth nuclei* [8+7]

11:00-11:30 Coffee break

11:30-13:30 Session
BUTLER, Peter (Liverpool) *Studies of pear-shaped nuclei* [20+10]
BECK, Tobias (FRIB, MSU) $\Delta K = 1$ *Coriolis mixing of 1^+ states of ^{164}Dy* [8+7]
PRILL, Sarah (Cologne) *Lifetime measurements around A=100 with pγ-coincidence DSAM* [15+10]
ESMAYLZADEH, Arwin (Koeln) *Investigation of shape coexistence and γ-softness in the neutron rich A≈100 region using lifetime measurements* [15+5]
VON SPEE, Franziskus (Koeln, IKP) *Signs of shape coexistence in mid-shell Te isotopes* [15+5]

13:30-15:00 Lunch

Tuesday afternoon, July 12, 15:00-19:00
Symmetries and QPTs (J.M. Arias, A. Leviatan)

15:00-16:45 Session
LEVIATAN, Ami (Hebrew Univ.) *What EDFs can tell us on PDSs in nuclei* [20+5]
DAS, Biswarup (GSI) *The nature of seniority symmetry breaking in the semi magic nucleus ^{94}Ru* [15+5]
JOHNSON, Calvin (San Diego) *Unmixing symmetries* [20+5]
GARCIA-RAMOS, Jose-Enrique (Huelva) *A quantum simulation of the Agassi model* [20+5]

16:45-17:15 Coffee break

17:15-19:00 Session
LENZI, Silvia Monica (Padova) *Nuclear radius, neutron skin and the mirror energy differences* [20+5]
VAN ISACKER, Piet, (GANIL) *The symmetry structure of octupole phonons in nuclei* [20+5]
LÉVAI, Géza, (ATOMKI) *Exact analytical treatment of nuclear shape phase transitions in terms of the sextic oscillator* [20+5]
FRANK, Alejandro, (ICN UNAM) *Phase transitions, scale invariance and criticality in self organized systems* [20+5]

Wednesday morning, July 13, 09:00-13:30

Symmetries of interacting boson and/or fermion models (P. Van Isacker, J. Jolie)

09:00-11:00 Session

NOMURA, Kosuke (Zagreb) *Evolution and coexistence of nuclear shapes in transitional regions* [25+5]

ESMAYLZADEH, Arwin (Koeln*) Lifetime measurements and shape coexistence in* ^{97}Sr [15+5]

GAVRIELOV, Noam (Yale) *Intertwined quantum phase transitions in odd-mass Nb isotopes* [15+5]

SANTOPINTO, Elena (INFN Genova) *Symmetries of the IBFFM and transfer reactions between odd-odd and even-even nuclei by using IBFFM* [15+5]

KLEEMANN, Jörn (Darmstadt) *Majorana parameters of the Interacting Boson Model of nuclear structure and their implication for 0νββ-decay* [15+5]

11:00-11:30 Coffee break

11:30-13:30 Session

VALIENTE DOBON, Jose' Javier (LNL-INFN) *Manifestation of the Berry phase in the atomic nucleus* ^{213}Pb [15+5]

KARAYONCHEV, Vasil (TRIUMF) *New aspects of the low-energy structure of* ^{211}At [15+5]

RAINOVSKI, Georgi Ivanov (Sofia) *Structure of low-lying quadrupole states of Po isotopes in the vicinity of* ^{208}Pb [15+5]

BECK, Tobias (FRIB, MSU), *Novel signatures for QPTs from mixed-symmetry states* [15+5]

IDE, Katharina E. (Darmstadt) *Isovector-E2 strength of the scissors mode of* ^{152}Sm [15+5]

13:30-15:00 Lunch

Wednesday afternoon, July 13, 15:00-19:00

Clustering and shape phase transitions in nuclei and other systems (R. Bijker, F. Perez-Bernal)

15:00-16:40 Session

VRETENAR, Dario (Zagreb) *Localization and clustering in nuclei* [25+5]

BIJKER, Roelof ICN-UNAM) *Alpha-particle clustering in light nuclei* [20+5]

FORTUNATO, Lorenzo (Padova) *Alpha-clusters configurations in* ^{12}C *and* ^{16}O *and alpha-transfer* [15+5]

STELLIN, Gianluca (CEA, Saclay) *Magnetic dipole moments as a signature of* α *clustering in even-even self-conjugate nuclei* [15+5]

16:40-17:10 Coffee break

17:10-19:00 Session

KHALOUF-RIVERA, Jamil (Huelva) *Quantum Fidelity Susceptibility as a tool to characterize shape transitions in molecular bending spectra* [15+5]

PAPST, Oliver (Darmstadt) *Sensitivity of the γ-decay of the Pygmy Dipole Resonance to nuclear deformation* [15+5]

KLEEMANN, Jörn (Darmstadt*) γ-decay Behavior of the Giant Dipole Resonances of* ^{154}Sm *and* ^{140}Ce [15+5]

BONATSOS, Dennis, (INPP Demokritos) *Islands of shape coexistence within covariant density functional theory and the proxy-SU(3) symmetry* [15+5]

CONFERENCE DINNER at **Restaurant Kopun**

Thursday morning, July 14, 09:00-13:30

Novel aspects and signatures of QPTs (A. Vitturi, L. Fortunato)

09:00-11:00 Session

FORTUNATO, Lorenzo (Padova) *Introduction* [3]

SZILNER, Suzana (Ruder Boskovic Inst) *Probing nucleon-nucleon correlations in heavy ion transfer reactions* [15+5]

LAY VALERA, José Antonio (Sevilla) *Shape phase transitions and shape coexistence through two-neutron transfer* [15+5]

BONATSOS, Dennis (Demokritos) *Prolate to oblate transition within the proxy-SU(3) symmetry* [15+5]

BENZONI, Giovanna (INFN, Milano) *Shape coexistence in Ni isotopic chain* [15+5]

LENZI, Silvia Monica (Padova) *Shape evolution across the N=Z line* [8+7]

11:00-11:30 Coffee break

11:30-13:30 Session

JOHNSON, Calvin (San Diego) *Lipkin model on a quantum computer* [20+5]

PÉREZ-FERNÁNDEZ, Pedro (Sevilla) *Quantum simulation and QPTs of an extended Agassi model* [15+5]

AKKOYUN, Serkan (Sivas Cumhuriyet Univ.) *The use of artificial neural networks in nuclear structure studies* [15+5]

BUDACA, Radu (Bucharest) *Wobbling and chiral bands with non-axial quasiparticle alignments* [15+5]

MARTINOU, Andriana (INPP Demokritos) *The microscopic origin of the Interacting Boson Model* [15+5]

13:30-15:00 Lunch

Thursday afternoon, July 14

SOCIAL TOUR

Friday morning, July 15, 09:00 -13:30
Excited states quantum phase transitions (P. Cejnar, P. Stransky)

09:00-11:00 Session
CEJNAR, Pavel (Prague) *Introduction to the physics of ESQPTs* [20+4]
DUKELSKY, Jorge (Madrid) *Analogs of QPTs and ESQPTs in a dissipative spin model* [20+4]
RELAÑO, Armando (Madrid*) Constant of motion identifying excited-state quantum phases and some applications to quantum optical models* [20+4]
L. CORPS, Ángel (Madrid) *Theory of dynamical phase transitions driven by excited-state quantum phase transitions* [20+4]
STRANSKY, Pavel (Prague) *Stabilization of quantum states at ESQPTs* [20+4]

11:00-11:30 Coffee break

11:30-13:30 Session
BUCHLEITNER, Andreas (Freiburg) *Eigenstate metamorphosis in the Bose Hubbard model* [20+4]
CORTINAS, Rodrigo, *Pairwise kissing of excited states in a squeezed Kerr-oscillator* [20+4]
SANTOS, Lea (Yeshiva Univ.), PEREZ-BERNAL, Francisco (Huelva)
Detection of excited state quantum phase transition with a Kerr-nonlinear resonator [35+7]

13:30- 13:40 Closing the workshop

13:40-15:10 Lunch