

40th anniversary international workshop on NTNUCLEAR THEORY

Supported by



2–8 July 2023

Rila Mountains, Bulgaria

<http://ntl.inrne.bas.bg/workshop/2023/>

PROGRAMME

Monday, July 3

MORNING session

09:30 – 09:45 **OPENING**

09:45 – 10:15 **C. Giusti:** Microscopic optical potentials from chiral forces and *Ab initio* nuclear densities

10:15 – 10:45 **K. Neergård:** “Onishi” formulas

10:45 – 11:15 COFFEE

11:15 – 11:45 **N. Minkov:** Two-quasiparticle K-isomers in heavy nuclei within self-consistent Skyrme Hartree-Fock plus BCS approach

11:45 – 12:15 **M. Oudih:** Alpha and cluster decay investigation of even-even actinide nuclei

12:15 – 12:45 **S. Baid:** Analytical solutions of the Bohr Hamiltonian with the sextic oscillator: Pt-Os isotopes

AFTERNOON session

16:00 – 16:30 COFFEE

16:30 – 17:00 **P. Kuznietsov** (*remote*): Analysis of ^4He elastic scattering on ^{208}Pb and ^{58}Ni nuclei at high energies by the S-matrix approach

17:00 – 17:30 **M. Hadizadeh** (*remote*): Four-body bound states: a *t*-matrix-free approach to Yakubovsky equations

17:30 – 18:00 **N. Firdous** (*remote*): Simulation of hadron-hadron collisions at high energies

N. Firdous (*remote*): Study of free parameters of phenomenological models implemented in PYTHIA

18:00 – 18:30 **M. Belgaid:** Newly developed semi-empirical formulas of nuclear excitation functions for (n, p) reactions at the energy range $12 \leq E_n \leq 21$ MeV and mass number range $30 \leq A \leq 128$

18:30 – 19:00 **F. Benrachi** (*remote*): Shell model calculations of even-*A* nuclides on the neighbourhood of ^{40}Ca core

Tuesday, July 4

MORNING session

- 09:30 – 10:00 **P. Ring**: Relativistic Brueckner-Hartree-Fock theory: an “ab initio” approach for nuclear matter and for finite nuclei
- 10:00 – 10:30 **Y. El Bassem** (*remote*): Nuclear shape evolution in even-even Pd isotopic chain within the covariant density functional theory
- 10:30 – 11:00 **M. Gaidarov**: Microscopic study of nuclear monopole excitations
- 11:00 – 11:30 COFFEE
- 11:30 – 12:00 **F. Sammarruca**: The multiple personalities of neutron matter
- 12:00 – 12:30 **İ. Sarpün**: Theoretical calculations of Cerium nucleon densities by Skyrme and Gogny forces
- 12:30 – 13:00 **B. Maheshwari**: Seniority isomerism and configuration mixing

AFTERNOON session

- 15:30 – 16:00 COFFEE
- 16:00 – 16:30 **V. Belocchi**: Meson exchange current in neutrino-nucleus scattering
- 16:30 – 17:00 **M. Ivanov**: Charge-current and neutral-current quasielastic (anti)neutrino scattering on ^{12}C target with realistic spectral and scaling functions
- 17:00 – 17:30 **N. Laouet** (*remote*): Odd-odd $A \sim 80$ systems spectroscopic properties in the vicinity of rp -process path
- 17:30 – 18:00 **S. Saha** (*remote*): Astrophysical reaction rate of $^{17}\text{O}(\alpha, n)^{20}\text{Ne}$ in R-matrix formalism
- 18:00 – 18:30 **Gh. Saleh** (*remote*): Primary particles produced by the Big Bang explosion
- 18:30 – 19:00 **E. Tel**: Studies of empirical formulas for total reaction cross sections at 14–15 MeV neutrons

Wednesday, July 5

MORNING session

- 09:30 – 10:00 **R. Machleidt**: What is ab initio?
- 10:00 – 10:30 **M. Barbaro**: Determination of the moments of the proton charge density: is there a proton radius puzzle?
- 10:30 – 11:00 **J.A. Caballero**:
- 11:00 – 11:30 COFFEE
- 11:30 – 12:00 **N. Büyükçizimeci**: Transport model simulations to determine of the newly formed nuclei of hadrons
- 12:00 – 12:30 **V. Nesterenko** (*remote*): Anomalous deformation dependence of moments of inertia
- 12:30 – 13:00 **Shan-Gui Zhou**: Study of rotating deformed halo nuclei with the DRHBc+AMP theory

AFTERNOON session

- 15:30 – 16:00 COFFEE
- 16:00 – 16:30 **M. Kaur** (*remote*): Clustering effects in $^{41,45,49}\text{Ca}^*$ formed in neutron induced reactions
- 16:30 – 17:00 **M. El Adri** (*remote*): Monopole and quadrupole coupling in the isoscalar giant resonances in ^{94}Zr and ^{96}Zr
- 17:00 – 17:30 **K. Drumev**: Mixed-mode dynamics and description of collective states in nuclear systems
- 17:30 – 18:00 **M. Bouhelal** (*remote*): Properties of ^{26}Mg in the sd shell model
- 18:00 – 18:30 **I.V. Petrov**: Nobel prize 2022: The new quantum revolution
- 19:30 – **OFFICIAL DINNER**

Thursday, July 6

EXCURSION



Friday, July 7

MORNING session

- 09:30 – 10:00 **P. Kostryukov**: Study of particle emission effects in low- and medium-energy nuclear fission
- 10:00 – 10:30 **S. Kaliraman** (*remote*): Interference effects in breakup reaction of the exotic nuclei
- 10:30 – 11:00 **P. Kumar** (*remote*): Nuclear structure study of mirror nuclei
- 11:00 – 11:30 COFFEE
- 11:30 – 12:00 **F. Lassiaille**: Relativity in motion
- 12:00 – 12:30 **S. Lim** (*remote*): Self-sustaining neutron multiplication in Bismuth salts
- 12:30 – 13:00 **A. Selim** (*remote*): Description of the spectroscopic properties of ^{24}Al

AFTERNOON session

- 14:30 – 15:00 COFFEE
- 15:00 – 15:20 **S. Garah** (*remote*): Dirac oscillator in non-Abelian algebra
- 15:20 – 15:40 **Rajni** (*remote*): Study of Nuclear Surface Diffuseness in Quadrupole and Hexadecapole Deformed Nuclei
- 15:40 – 16:00 **M. Nisa** (*remote*): Multiparton interactions in PYTHIA
- 16:00 – 16:20 **T. Nazir** (*remote*): Color reconnection in PYTHIA
- 16:20 – 16:40 **S. Akkoyun** (*remote*):
- 16:40 – 16:50 **CLOSING**