SNP 2008

Workshop on Statistical Nuclear Physics and Applications in Astrophysics and Technology

Program

Ohio University • Athens Ohio • July 8-11, 2008

Topics:

- Level densities
- Optical models and elastic scattering
- Gamma-ray strength functions
- Astrophysics: r- and p-processes, global reaction model input parameters
- Applications: nuclear reactors, stockpile stewardship, medical physics

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Local Organizing Committee:

- Carl Brune
- Steven Grimes
- Thomas Massey
- Andreas Schiller
- Alexander Voinov

Edwards Accelerator Laboratory,
Institute for Nuclear and Particle Physics,
Department of Physics and Astronomy,
Ohio University,
Athens, OH-45701, U.S.A.

Tuesday, July 8, part I

Continental Breakfast (30 min) 8:30 to 8:55

Opening Remarks (5 min) 8:55 to 9:00

Morning Session (90 min) 9:00 to 10:30

Nuclear level densities (I), Chair: A. Voinov

Vladimir Zelevinsky (pdf, ppt, wmv, mp4)
National Superconducting Cyclotron Laboratory, Michigan State University, East Lansing, MI, USA
Many-body quantum chaos and exponential convergence of large Hamiltonian matrices (40+5 min) 9:00 to 9:45

Mihai Horoi (pdf, ppt, wmv, mp4)
Central Michigan University, Mt. Pleasant, MI, USA
Accurate description of the spin- and parity-dependent nuclear level densities (40+5 min) 9:45 to 10:30

Coffee Break (30 min) 10:30 to 11:00

Noon Session (80 min) 11:00 to 12:20

Radiative strength functions (I), Chair: A. Schiller

Hiroaki Utsunomiya (pdf, ppt, wmv, mp4)
Konan University, Kobe, Japan
Photodisintegration and nuclear statistical quantities in astrophysics (35+5 min) 11:00 to 11:40

Peter von Neumann-Cosel (pdf, ppt, wmv, mp4)
TU Darmstadt, Germany
Level densities and γ strength functions from the fine structure of giant resonances (35+5 min) 11:40 to 12:20

Lunch Break (90 min) 12:20 to 1:50

Tuesday, July 8, part II

Afternoon Session (90 min) 1:50 to 3:20

Nuclear astrophysics (I), Chair: C. Brune

Sotirios Harissopulos (pdf, ppt, wmv, mp4)
National Centre for Scientific Research "Demokritos", Aghia Paraskevi, Athens, Greece
Capture reactions relevant to p-process nucleosynthesis (40+5 min) 1:50 to 2:35

Artemisia Spyrou (pdf, ppt, wmv, mp4)
National Superconducting Cyclotron Laboratory, Michigan State University, East Lansing, MI, USA
Measuring reaction cross sections to understand the p-process (40+5 min) 2:35 to 3:20

Coffee Break (30 min) 3:20 to 3:50

Evening Session (105 min) 3:50 to 5:35

Nuclear level densities (II), Chair: S. Grimes

Magne Guttormsen (pdf, ppt, wmv, mp4)
Oslo University, Norway
Nuclear level density and its thermodynamical interpretation (30+5 min) 3:50 to 4:25

Ann-Cecilie Larsen (pdf, ppt, wmv, mp4)
Oslo University, Norway
Gamma-ray strength functions measured at OCL (25+5 min) 4:25 to 4:55

Alexander Voinov (pdf, ppt, wmv, mp4)
Ohio University, Athens, OH, USA
Experimental study of level density and γ-strength functions at Edwards Accelerator Laboratory (15+5 min) 4:55 to 5:15

Sunniva Siem (pdf, ppt, wmv, mp4)
Oslo University, Norway
Experimental level densities and radiative strength functions in rare earth nuclei (15+5 min) 5:15 to 5:35

Reception (60 min) 5:45 to 6:45

Wednesday, July 9, part I

Continental Breakfast (30 min) 8:30 to 9:00

Morning Session (100 min) 9:00 to 10:40

Nuclear reactions (I), Chair: T. Massey

Ronald Johnson (pdf, ppt, wmv, mp4)
University of Surrey, Guildford, Surrey, UK
Transfer reactions with deuterons (45+5 min) 9:00 to 9:50

Robert Charity (pdf, ppt, wmv, mp4)
Washington University, St. Louis, MO, USA
Learning about correlations with the dispersive optical model and their relevance to the level density in neutron-rich systems (45+5 min) 9:50 to 10:40

Coffee Break (30 min) 10:40 to 11:10

Noon Session (70 min) 11:10 to 12:20

Nuclear level densities (III), Chair: A. Voinov

Dorel Bucurescu (pdf, ppt, wmv, mp4)
National Institute of Physics and Nuclear Engineering, Bucharest, Romania
Nuclear level densities and spin distributions (30+5 min) 11:10 to 11:45

Olof Henrik Uhrenholt (pdf, ppt, wmv, mp4)
Lund University, Sweden
Microscopic collective enhancements in the combinatorial nuclear level density model (30+5 min) 11:45 to 12:20

Lunch Break (90 min) 12:20 to 1:50

Wednesday, July 9, part II

Afternoon Session (105 min) 1:50 to 3:35

Radiative strength functions (II), Chair: A. Schiller

Oliver Wieland (pdf, ppt, wmv, mp4)
Istituto Nazionale di Fisica Nucleare, Milano, Italy
The γ decay of nuclei under extreme conditions (30+5 min) 1:50 to 2:25

Ronald Schwengner (pdf, ppt, wmv, mp4)
Forschungszentrum Dresden-Rossendorf, Germany
Gamma-ray strength function measurements at ELBE (30+5 min) 2:25 to 3:00

Milan Krticka (pdf, ppt, wmv, mp4)
Charles University, Prague, Czech Republic, and North Carolina State University, Raleigh, NC, USA
The two-step γ cascade method as a tool for studying γ-ray strength functions (30+5 min) 3:00 to 3:35

Coffee Break (30 min) 3:35 to 4:05

Evening Session (90 min) 4:05 to 5:35

Nuclear astrophysics (II), Chair: C. Brune

Paul Koehler (pdf, ppt, wmv, mp4)
Oak Ridge National Laboratory, TN, USA
Two new techniques for determining spins and parities of neutron resonances, and the search for non-statistical effects in neutron capture (30+5 min) 4:05 to 4:40

Rebecca Surman (pdf, ppt, wmv, mp4)
Union College, Schenectady, NY, USA
Aspects of the astrophysics and nuclear physics of r-process nucleosynthesis (30+5 min) 4:40 to 5:15

Babatunde Moses Oginni (pdf, ppt, wmv, mp4)
Ohio University, Athens, OH, USA
Test of level density models from reactions of ^{6}Li on ^{58}Fe and ^{7}Li on ^{57}Fe (15+5 min) 5:15 to 5:35

Banquet starts at 6:30

Thursday, July 10, part I

Continental Breakfast (30 min) 8:30 to 9:00

Morning Session (110 min) 9:00 to 10:50

Nuclear level densities (IV), Chair: S. Grimes

Yoram Alhassid (pdf, ppt, wmv, mp4)
Yale University, New Haven, CT, USA
Statistical properties of nuclei:
beyond the mean field (35+5 min) 9:00 to 9:40

Hitoshi Nakada (pdf, ppt, wmv, mp4)
Chiba University, Japan
Shell model Monte Carlo approach to level densities
of heavy deformed nuclei (30+5 min) 9:40 to 10:15

Cem Özen (pdf, ppt, wmv, mp4)
Yale University, New Haven, CT, USA
Level densities in the shell model Monte Carlo method: parity
dependence and rare-earth nuclei. (30+5 min) 10:15 to 10:50

Coffee Break (30 min) 10:50 to 11:20

Noon Session (70 min) 11:20 to 12:30

Radiative strength functions (III), Chair: A. Schiller

Jürgen Gerl (pdf, ppt, wmv, mp4)
Gesellschaft für Schwerionenforschung, Darmstadt, Germany
Nuclear structure studies using fast
radioactive beams (30+5 min) 11:20 to 11:55

Takashi Nakamura (pdf, ppt, wmv, mp4)
Tokyo Institute of Technology, Japan
E1 strength distribution of halo nuclei observed
via the Coulomb breakup (30+5 min) 11:55 to 12:30

Lunch Break (90 min) 12:30 to 2:00

Thursday, July 10, part II

Afternoon Session (85 min) 2:00 to 3:25

Nuclear level densities (V), Chair: A. Voinov

Gary Mitchell (pdf, ppt, wmv, mp4)
North Carolina State University, Raleigh, NC, USA and
Triangle Universities Nuclear Laboratory, Durham, NC, USA
Purity and completeness — issues for nuclear resonances (40+5 min) 2:00 to 2:45

Robert Haight (pdf, ppt, wmv, mp4)
Los Alamos National Laboratory, NM, USA
Statistical neutron-induced reactions studied by neutron, proton, and α-particle emission (35+5 min) 2:45 to 3:25

Coffee Break (30 min) 3:25 to 3:55

Evening Session (110 min) 3:55 to 5:45

Statistical model calculations (I), Chair: T. Massey

Roberto Capote Noy (pdf, ppt, wmv, mp4)
International Atomic Energy Agency, Vienna, Austria
IAEA nuclear data: the Reference Input Parameter Library (RIPL) for nuclear reaction calculations (40+5 min) 3:55 to 4:40

Toshihiko Kawano (pdf, ppt, wmv, mp4)
Los Alamos National Laboratory, NM, USA
Statistical model calculations for neutron radiative capture process (25+5 min) 4:40 to 5:10

Anna Hayes (pdf, ppt, wmv, mp4)
Los Alamos National Laboratory, NM, USA
Statistical spectroscopy for fundamental physics, applied science, and national security (30+5 min) 5:10 to 5:45

Tour of Edwards Accelerator Lab starts at 6:00

Friday, July 11, part I

Continental Breakfast (30 min) 8:30 to 9:00

Morning Session (70 min) 9:00 to 10:10

Nuclear level densities (VI), Chair: S. Grimes

Marco Pigni (pdf, ppt, wmv, mp4)
Brookhaven National Laboratory, Upton, NY, USA
Predicting cross section uncertainties for neutron-nucleus scattering (30+5 min) 9:00 to 9:35

Calvin Johnson (pdf, ppt, wmv, mp4)
San Diego State University, CA, USA
Moment methods for modeling nuclear level densities (30+5 min) 9:35 to 10:10

Coffee Break (30 min) 10:10 to 10:40

Noon Session (90 min) 10:40 to 12:10

Nuclear astrophysics (III), Chair: C. Brune

René Reifarth (pdf, ppt, wmv, mp4)
Gesellschaft für Schwerionenforschung, Darmstadt, Germany
Recent neutron capture measurements at FZK (40+5 min) 10:40 to 11:25

Richard Cyburt (pdf, ppt, avi-animation, wmv, mp4)
National Superconducting Cyclotron Laboratory
Michigan State University, East Lansing, MI, USA
Impact of nuclear input on X-ray bursts (40+5 min) 11:25 to 12:10

Lunch Break (90 min) 12:10 to 1:40

Friday, July 11, part II

Afternoon Session (70 min) 1:40 to 2:50

Applications (I), Chair: T. Massey

Richard Boyd (pdf, ppt, wmv, mp4)
Lawrence Livermore National Laboratory, CA, USA
Performing nuclear astrophysics experiments at the National Ignition Facility (30+5 min) 1:40 to 2:15

Micah Johnson (pdf, ppt, wmv, mp4)
Lawrence Livermore National Laboratory, CA, USA
Using nuclear resonance fluorescence to isotopically map containers (30+5 min) 2:15 to 2:50

Coffee Break (30 min) 2:50 to 3:20

Evening Session (60 min) 3:20 to 4:20

Statistical model calculations (II), Chair: A. Schiller

Boris Zhuravlev (pdf, ppt, wmv, mp4)
State Scientific Center of Russian Federation,
Institute for Physics and Power Engineering, Obninsk, Russia
Nuclear level densities near Z=50 from neutron evaporation spectra in (p,n) reaction (35+5 min) 3:20 to 4:00

Shaleen Shukla (pdf, ppt, wmv, mp4)
Ohio University, Athens, OH, USA
Calculation of nuclear level densities near the drip lines (15+5 min) 4:00 to 4:20

Vladimir Plujko (pdf, ppt, wmv, mp4)
Taras Shevchenko National University, Kyiv, Ukraine
Closed-form E1 radiative strength functions for photoabsorption and γ-decay (30+5 min) absent

Closing Remarks (5 min) 4:20 to 4:25