

# Programme of the 4<sup>th</sup> International Balkan School on Nuclear Physics

**Wednesday, 22/9/2004**

08.30 – 09.30 **Registration**  
09.30 – 10.30 **Opening Ceremony**

School Programme

Chairman: **Baki Akkus (Istanbul)**

10.30 – 11.15 **Richard Casten** (Yale University, USA)  
*Introductory Lecture*

11.15 – 11.45 **Coffee Break**

11.45 – 12.30 **Ricardo Broglia** (University of Milano, Italy/ INFN, Italy/ The Niels Bohr Institute, Germany)  
*Pairing in Nuclei (1)*

12.30 – 13.15 **Kim Lister** (Argonne National Laboratory, USA)  
*Nuclear Correlations at the Limits of Stability: What Happens When the Bulk-Binding Stops?(1)*

13.15 – 16.00 **Lunch Break**

16.00 – 16.45 **Michael Bentley** (Keele University, UK)  
*Coulomb Effects and Isobaric Multiplets (1)*

16.45 – 17.30 **Jon Billowes** (University of Manchester, UK)  
*Laser Spectroscopy on Bunched Radioactive Ion Beams (1)*

17.30 – 18.00 **Coffee Break**

18.00 – 19.00 Student Seminars Chairman: **Dennis Bonatsos (Athens)**

**Christoph Fransen** (University of Koeln, Germany)  
*Low-Spin Gamma-Ray Spectroscopy Of The Doubly-Magic Nucleus <sup>56</sup>Ni With The Miniball-Spectrometer*

**Rickard Du Rietz** (Lund University, Sweden)  
*Effective Charges in The fp Shell*

**Andrey Blazhev** (University of Sofia, Bulgaria/GSI, Darmstadt)  
*Delayed Spectroscopy of <sup>98</sup>Cd*

**Dzmitry Shoukavy** (Institute of Physics, Belarus)  
*Quantum Mechanical Scattering Problem in the Lobachevsky Space .The Effect of Curvature*

## Thursday, 23/9/2004

### School Programme

Chairman: **Borislav Slavov (Sofia)**

- 09.15 – 10.00 **Piet Van Isacker** (GANIL, France)  
*Symmetries of the Nuclear Many-Body Problem (1)*
- 10.00 – 10.45 **Piet Van Isacker** (GANIL, France)  
*Symmetries of the Nuclear Many-Body Problem (2)*
- 10.45 – 11.15 **Coffee Break**
- 11.15 – 12.00 **Richard Casten** (Yale University, USA)  
*New Perspectives in Structural Evolution in Nuclei and in the Structure of Exotic Nuclei*
- 12.00 – 12.45 **Jan Jolie** (University of Koeln, Germany)  
*The Rich Structures of a Simple Hamiltonian (1)*
- 12.45 – 15.30 **Lunch Break**
- 15.30 – 16.00 **POSTER SESSION**
- 16.00 – 16.45 **Norbert Pietralla** (Stony Brook, USA)  
*Proton-Neutron Mixed-Symmetry States of Heavy Nuclei (1)*
- 16.45 – 17.30 **Dino Bazzacco** (INFN, Italy)  
*Gamma Ray Tracking (1)*
- 17.30 – 18.00 **Coffee Break / POSTER SESSION**
- 18.00 – 19.00 Student Seminars      Chairman: **Dimitar Balabanski (Sofia/Camerino)**
- Stijn De Baerdemacker** (Ghent University, Belgium)  
*Interplay Between Shellmodel and Collective Behaviour in the Z=50 Closed Shell Region*
- R. Burcu Cakirli** (Istanbul University, Turkey)  
*Breakdown of Vibrational Structure in  $^{98}\text{Ru}$*
- Andreas Linnemann** (University of Koeln, Germany)  
*Investigation of Shape Coexistence in  $^{106}\text{Cd}$*
- Stoyanka Ilieva** (University of Sofia, Bulgaria)  
*Quasi-Gamma Band and Odd-Even Staggering Effect in  $^{102}\text{Ru}$*
- 20.00 **Reception at Bodrum Castle**

## **Friday, 24/9/2004**

### School Programme

Chairman: **Istvan Bikit (Novi Sad)**

09.15 – 10.00 **Ricardo Brogna** (University of Milano, Italy/ INFN, Italy/ The Niels Bohr Institute, Germany)  
*Pairing in Nuclei (2)*

10.00 – 10.45 **Michael Bentley** (Keele University, UK)  
*Coulomb Effects and Isobaric Multiplets (2)*

10.45 – 11.15 **Coffee Break**

11.15 – 12.00 **Roelof Bijker** (ICN-UNAM, Mexico City)  
*Shape Phase Transitions in Nuclei and Random Interactions (1)*

12.00 – 12.45 **Norbert Pietralla** (Stony Brook, USA)  
*Proton-Neutron Mixed-Symmetry States of Heavy Nuclei (2)*

12.45 – 15.30 **Lunch Break**

15.30 – 16.00 **POSTER SESSION**

16.00 – 16.45 **Jon Billowes** (University of Manchester, UK)  
*Laser Spectroscopy on Bunched Radioactive Ion Beams (2)*

16.45 – 17.30 **Dino Bazzacco** (INFN, Italy)  
*Gamma-Ray Tracking (2)*

17.30 – 18.00 **Coffee Break / POSTER SESSION**

18.00 – 19.00 Student Seminars Chairman: **Nizamettin Erduran (Istanbul)**

**Veerle Hellemans** (Ghent University, Belgium)  
*Configuration Mixing and  $B(E2)$ -Values in  $^{188}\text{Pb}$*

**Kalin Gladnishki** (University of Sofia, Bulgaria)  
*Lifetimes in the  $\nu i^{-1}_{13/2} \otimes \pi(i_{13/2} h_{9/2})$  MI Band in  $^{193}\text{Pb}$*

**Nikola Nikolov** (University of Sofia, Bulgaria)  
*Particle Plus Triaxial Rotor Model (PTRM) Calculations for Transitional Ir and Au Nuclei in  $A \sim 190$  Mass Region*

**Mustafa Yilmaz** (University of Gaziantep, Turkey)  
*Symmetry Properties of the Energy Bands in Deformed Heavy Nuclei*

20.30 – 22.00 **Football Game**  
TEAM 1 (Captain: Nizamettin Erduran)  
TEAM 2 (Captain: Dimiter Balabanski)

## Saturday, 25/9/2004

- 09.15 – 13.00 Seminars Chairman: **Dimitar Balabanski (Sofia/Camerino)**
- 09.15 – 09.45 **Ayse Atac Nyberg** (Uppsala Universitet Inst. for Stralningsvetenskap, Sweden)  
*Fast Neutrons in Biomedical Applications*
- 09.45 – 10.15 **Dimitris Lenis** (N.C.S.R. Demokritos, Greece)  
*Novel Developments in Critical Point Symmetries*
- 10.15 – 11.00 Student Seminars
- Dimitris Petrellis** (N.C.S.R. Demokritos, Greece)  
*Variational Procedure Leading from Davidson Potentials to the  $E(5)$  and  $X(5)$  Critical Point Symmetries*
- Huben Ganev** (University of Sofia, Bulgaria)  
*Distribution of the Low-Lying Collective States in the Framework of the Interacting Vector Boson Model*
- Milan Krlicka** (Charles University, Czech Republic)  
*Exploitation of Large Gamma-Detector Arrays for Studying the Gamma Decay Following the Neutron Capture in Medium-Weight and Heavy Nuclei*
- 11.00 – 11.30 **Coffee Break / Voting for Best Posters**
- 11.30 – 12.00 **Dimitar Tonev** (INFN, Italy)  
*Lifetime Measurements: A Powerful Tool to Check for Existence of Dynamical Symmetries in Nuclei*
- 12.00 – 13.00 Student Seminars
- Victor Iacob** (Texas A&M University, USA)  
*Precise  $ft$ -Value Measurements for the Superallowed  $0^+ \rightarrow 0^+$   $\beta$ -Decay of  $^{34}\text{Ar}$*
- Natasa Todorovic** (University of Novi Sad, Serbia and Montenegro)  
 *$0\nu$  Mode in Double Beta Decay in  $^{50}\text{Cr}$*
- Elzbieta Wojcik** (Warsaw University, Poland)  
*Giant Dipole Radiation and Isospin Mixing in  $^{36}\text{Ar}$  Nuclei*
- Miguel Costa Lopes** (Instituto Superior Tecnico, Portugal)  
*Importance of the Coriolis Coupling in Odd-Odd Deformed Proton Emitters*
- 23.00 **Halikarnas Disco (free)**

## Monday, 27/9/2004

### School Programme

Chairman: **Istvan Bikit (Novi Sad)**

- 09.15 – 10.00 **David Lunney** (Université de Paris Sud, France)  
*Mass Measurements of Exotic Nuclides for Nuclear Structure, Weak Interactions and Astrophysics (1)*
- 10.00 – 10.45 **Gerda Neyens** (K.U. Leuven, Belgium)  
*Static Moments of Spin-Oriented Exotic Nuclei (1)*
- 10.45 – 11.15 **Coffee Break**
- 11.15 – 12.00 **Michael Hass** (The Weizmann Institute, Israel)  
*Solar Fusion Reactions: From Neutrino Masses to Big-Bang Nucleo-Synthesis (1)*
- 12.00 – 12.45 **Roelof Bijker** (ICN-UNAM, Mexico City)  
*Shape Phase Transitions in Nuclei and Random Interactions (2)*
- 12.45 – 16.00 **Lunch Break**
- 16.00 – 16.45 **Kim Lister** (Argonne National Laboratory, USA)  
*Nuclear Correlations at the Limits of Stability: What Happens When the Bulk-Binding Stops? (2)*
- 16.45 – 17.30 **Juergen Gerl** (GSI, Darmstadt, Germany)  
*Nuclear Spectroscopy of Exotic Nuclei with RISING*
- 17.30 – 18.00 **Coffee Break**
- 18.00 – 19.00 Student Seminars Chairman: **Dennis Bonatsos (Athens)**
- Radomira Lozeva** (University of Sofia, Bulgaria/ GSI, Germany)  
*Calorimeter Telescope For Identification of Relativistic HI Reaction Channels*
- Juan Urrego-Blanco** (University of Tennessee, USA / Oak Ridge National Laboratory, USA)  
*Perspectives in the Development of a Polarized Solid Target for RIB Experiments*
- Neele Vermeulen** (K.U.Leuven, Belgium)  
*Quadrupole Moments of Neutron Rich Isomeric States Produced Via Projectile Fragmentation*
- 1<sup>st</sup> poster winner**
- 20.00 **School Dinner (Turkish Night)**

## Tuesday, 28/9/2004

### School Programme

Chairman: **Borislav Slavov (Sofia)**

- 09.15 – 10.00 **Andreas Karydas** (NCSR “Demokritos, Greece)  
*Analytical Nuclear and Atomic Ion-Beam Methods: Basic Principles and Applications (1)*
- 10.00 – 10.45 **Juergen Gerl** (GSI, Darmstadt, Germany)  
*The Facility for Antiproton and Ion Research –FAIR– at GSI*
- 10.45 – 11.15 **Coffee Break**
- 11.15 – 12.00 **Michael Hass** (The Weizmann Institute, Israel)  
*Solar Fusion Reactions: From Neutrino Masses to Big-Bang Nucleo-Synthesis (2)*
- 12.00 – 12.45 **David Lunney** (Université de Paris Sud, France)  
*Mass Measurements of Exotic Nuclides for Nuclear Structure, Weak Interactions and Astrophysics (2)*
- 12.45 – 16.00 **Lunch Break**
- 16.00 – 16.45 **Jan Jolie** (University of Koeln, Germany)  
*The Rich Structures of a Simple Hamiltonian (2)*
- 16.45 – 17.15 **Theodoros Gaitanos** (University of Catania, Italy)  
*Isospin Effects in Intermediate Energy Heavy Ion Collisions*
- 17:15 – 17:30 **Olimpia Kijewska** (Institute of Experimental Physics, Poland)  
 *$^{20}\text{Ne}+^{12}\text{C}$  Reaction at 5 and 9 MeV/u Studied at the Warsaw Cyclotrone*
- 17.30 – 18.00 **Coffee Break**
- 18.00 – 19.00 Student Seminars      Chairman: **Dimitar Balabanski (Sofia/Camerino)**
- Atsushi Umeya** (Tokyo Institute of Technology, Tokyo)  
*Single-Particle Energies in Neutron-Rich Nuclei*
- Deyan Yordanov** (K.U.Leuven, Belgium)  
*Spins and Magnetic Moments of Optically Polarized  $^{29,31}\text{Mg}$  Beams Determined via  $\beta$  Decay Asymmetry Measurements*
- Mehtap Yalcinkaya** (Istanbul University, Turkey)  
*Photoelectron and Photoion Spectroscopy of Transition Metal Compounds Using Synchrotron Radiation*
- 2<sup>nd</sup> poster winner**
- 19.00 – 20.30 **Dinner**
- 20.30 – 22.00 **Football Game: Rematch**  
TEAM 1 (Captain: Nizamettin Erduran)  
TEAM 2 (Captain: Dimitar Balabanski)
- Basketball game

## Wednesday, 29/9/2004

### School Programme

Chairman: **Baki Akkus (Istanbul)**

- 09.15 – 10.00 **David Lunney** (Université de Paris Sud, France)  
*Mass Measurements of Exotic Nuclides for Nuclear Structure, Weak Interactions and Astrophysics (3)*
- 10.00 – 10.45 **Gerda Neyens** (K.U. Leuven, Belgium)  
*Static Moments of Spin-Oriented Exotic Nuclei (2)*
- 10.45 – 11.15 **Coffee Break**
- 11.15 – 12.00 **Andreas Karydas** (NCSR “Demokritos, Greece)  
*Analytical Nuclear and Atomic Ion-Beam Methods: Basic Principles and Applications (2)*
- 12.00 – 12.45 **Norbert Pietralla** (Stony Brook, USA)  
*Nuclear Structure toward Rigid Rotation (3)*
- 12.45 – 16.00 **Lunch Break**
- 16.00 – 17.30 Seminars Chairman: **Nizamettin Erduran (Istanbul)**
- 16.00 – 16.30 **Hristo Lafchiev** (Bulgarian Academy of Sciences, Bulgaria)  
*The Higher Tamm-Dankov Cranking Approximation (CHTDA) for Superdeformed A~190 Rotating Bands*
- 16.30 – 17.00 Student Seminars
- Kris Van Houcke** (Ghent University, Belgium)  
*Quantum Monte Carlo Methods for the Interacting Boson Model*
- Sukhendusekhar Sarkar** (The University of Burdwan, India)  
*Shell Model Predictions for Very Neutron-Rich Nuclei in <sup>132</sup>Sn Region: Interesting Features of Effective-Charge Revealed*
- 17:00 - 17:30 **Coffee Break**
- 17.30 – 18.30 Student Seminars
- Ali Tutay** (Istanbul University, Turkey)  
*The Study of Temperature and Correlation Between Intermediate Mass Fragments and Light Particles in the <sup>32</sup>S + <sup>58</sup>Ni Reaction at 30 MeV/A*
- Ghania Medkour** (USTHB, Algeria)  
*Low Energy Fission Dynamics*
- Zhanna Mezentseva** (Institute of Physics and Power Engineering, Russia)  
*The Investigation of the Resonance Structure of Fissionable and Constructional Materials Using the Multiplicity Spectrometry*
- 3<sup>rd</sup> poster winner**
- 18.30 – 19.00 **Closing of the 4<sup>th</sup> Balkan School**

## **POSTER PRESENTERS**

1. **Azad Ahmadov** (JINR, 141980 Dubna, Russia)  
*Spin Effects in Processes of Single Top and Top-Anti-Top Quarks Productions in Proton Colliders*
2. **Yuri Alexandrov** (JINR, Russia)  
*Some Principal Problems in Physics and Neutron Low Energy Physics*
3. **Etele Albert** (University of Medicine and Pharmacy, ROMANIA)  
*Irradiation Activity of Some Plants Grown in Volcanic Regions*
4. **Lilya Atanasova** (University of Sofia, Bulgaria)  
*High-Spin States in  $^{185}\text{Ir}$*
5. **Anca Bancuta** (Valahia University of Targoviste, Romania)  
*Atomic Absorption Spectrometry in Leaves Trees Analysis*
6. **Pinar Can** (Istanbul University, Turkey)  
*Spectroscopy of  $^{136}\text{La}$*
7. **Dejan Jokovic** (Institute of Physics, Belgrade, Serbia)  
*Modifying the Standard Liquid Drop Model*
8. **Stephane Lalkovski** (University of Sofia, Bulgaria)  
*Ground-Gamma Band Mixing and Evolution of Collectivity in Even-Even Neutron-Rich Nuclei with  $40 < Z < 50$*
9. **Dusan Mrdja** (Faculty of Science, Novi Sad, Serbia and Montenegro)  
*Low Level Shielding Problems of Gamma Spectrometers*
10. **Ayodeji Olorunsola** (Olabisi Onabanjo University, Ago Iwoye, Nigeria)
11. **Mourad Ramdhane** (Université Mentouri Constantine, Algeria)  
*Spectroscopy Studies by  $\beta$  Decay and Delayed Particles*
12. **Vadim Sircheli** (Moldova State University, Moldova)  
*Radiative Recombination Centers in ZnSe-Based Scintillators for Ionizing-Radiation Detectors*
13. **Ibrahim Yigitoglu** (Istanbul University, Turkey)  
*Spectroscopic Investigation of  $^{187}\text{Ir}$*
14. **Gheorghe Zet** (Department of Physics Technical University of Iasi, Romania)  
*Magnetic Moment Values of Baryons as a Consequence of  $SL(3,C)$  Symmetry*
15. **Mirjana Djurasevic** (Institute of Nuclear Sciences, Vinca, Serbia and Montenegro)  
*Optimum Conditions for a Zns(Ag) Scintillation Detector Operation*