



**Carpathian Summer School of Physics 2010**  
***Exotic Nuclei and Nuclear/Particle Astrophysics (III)***  
***“From nuclei to stars”***  
***20 June – 3 July 2010, Sinaia, Romania***

***Final Programme***

**Carpathian Summer School of Physics 2010**  
***Exotic Nuclei and Nuclear/Particle Astrophysics III***  
**June 20 – July 3, 2010, Sinaia, Romania**  
**Program**

<b>Monday, June 20<sup>th</sup>, 2010</b>	
<b>Morning Session: Opening</b>	
<b>Chair: S. Stoica</b>	
9:00	<i>A. Smirnov</i> : Neutrino properties
10:00	<i>A. Smirnov</i> :
10:50 Coffee break	
11:10	<i>C.Iliadis</i> : Topics in Nuclear Astrophysics
12:00	<i>C.Iliadis</i> :
13:00 Lunch	
<b>Afternoon Session</b>	
<b>Chair: F Ferroni</b>	
15:00	<i>S. Stoica</i> : Introduction to double $\beta$ -decay process
15:55 Coffee break	
16:10	<i>J. Suhonen</i> : Nuclear Structure aspects of double $\beta$ -decay

<b>Tuesday, June 21<sup>st</sup>, 2010</b>	
<b>Morning Session:</b>	
<b>Chair: H. Rebel</b>	
9:00	<i>E. Roulet</i> : Ultra-high energy cosmic rays and the Pierre Auger observatory
10:00	<i>E. Roulet</i> :
10:50 Coffee break	
11:10	<i>B. Rubio</i> : Exotic nuclei
12:00	<i>A Bonaccorso</i> : Theory of Nuclear reactions with RIBs (I)
13:00 Lunch	
<b>Afternoon Session</b>	
<b>Chair: N Auerbach</b>	
15:00	<i>A Bonaccorso</i> : Theory of Nuclear reactions with RIBs (II)
15:55 Coffee break	
16:10	<i>C. Pena-Garay</i> : Solar neutrinos
17:00	<i>F. Ferroni</i> : Double $\beta$ -decay experiments
18:00	Communications: <i>Jacob, Kumar, Gupta</i>

**Wednesday, June 23<sup>rd</sup>, 2010****Morning Session:****Chair:**9:00 | *C. Pena-Garay*: Solar neutrinos9:50 | *Break*10:00 | *C. Pena-Garay*

10:50 Coffee break

11:10 | *C. Iliadis*12:00 | *B. Rubio*

13:00 Lunch

**Afternoon Session:****Chair: S. Shlomo**15:00 | *B. Rubio*

15:50 Coffee break

16:10 | Communications: *Chauhan, Puglia, Neacsu*

17:00 Break

17:10 | Communications: *Aish, Chernyak, Kardan***Thursday, June 24<sup>th</sup>, 2010****Morning Session:****Chair: C. Iliadis**9:00 | *B. Fields*: BBN and cosmology

9:50 Break

10:00 | *B. Fields*

10:50 Coffee break

11:10 | *K. -L. Kratz*: s- and r-processes12:00 | *K. -L. Kratz*

13:00 Lunch

**Afternoon Session****Chair: F. Halzen**15:00 | *G. Sigl*: Ultra High Energy Cosmic Rays and cosmic neutrinos

15:50 Coffee break

16:10 | *G. Sigl*

17:00 Break

17:10 | Communications: *Kalandarov, Tueros, Saftoiu*

<b>Friday, June 25<sup>th</sup>, 2010</b>	
<b>Morning Session</b>	
<b>Chair: Roulet</b>	
9:00	<i>F. Halzen</i> : Cosmic rays
9:50 Break	
10:00	<i>F. Halzen</i>
10:50 Coffee break	
11:10	<i>C. Rolfs</i> : Nuclear Physics for Astrophysics
12:00	<i>C. Rolfs</i> :
13:00 Lunch	
<b>Afternoon Session</b>	
<b>Chair: Rubio</b>	
15:00	<i>L. Trache</i> : Reactions with RIB-exp.
15:50 Coffee break	
16:10	<i>N. Auerbach</i> : The super radiant mechanism, doorway states, and nuclear reactions
17:00 Break	
17:10	Communications: <i>Jokovic, Maletic, Pavalas</i>

<b>Saturday, June 26<sup>th</sup>, 2010</b>	
<b>Morning Session:</b>	
<b>Chair: Smirnov</b>	
9:00	<i>F. Halzen</i>
9:50 Break	
10:00	<i>F. Halzen</i>
10:50 Coffee break	
11:10	<i>M. Cirelli</i> : Hoping to indirectly detect Dark Matter with cosmic rays
12:00	<i>M. Cirelli</i>
13:00 Lunch	
14:00 <i>Round table: Science and Society</i>	
15:50 Coffee break	
16:10 <i>Round table: Do (all) countries need science?!</i>	
19:00 on <b>BANQUET</b>	

<b>Monday, June 28<sup>th</sup>, 2010</b>	
<b>Morning Session: Nuclear reactions</b>	
<b>Chair: Motobayashi</b>	
9:00	<i>R. Tribble</i> : Asymptotic Normalization Coefficients: an Indirect Method for Nuclear Astrophysics
9:55	<i>Auerbach</i> : Electric dipole moments in radioactive nuclei, tests of time reversal symmetry in nuclei
10:50 Coffee break	
11:10	<i>Rolfs</i> : LUNA and key reactions in nuclear astrophysics
12:05	<i>Sobotka</i> : 2p decay in ${}^6\text{Be}$ and ${}^{10}\text{C}$ and 2p-2p decay in ${}^8\text{C}$
13:00 Lunch	
<b>Afternoon Session: Exotic nuclear matter</b>	
<b>Chair: Bertulani</b>	
15:00	<i>Shlomo</i> : Temperature and density dependence of properties of nuclear matter deduced from heavy ion collisions
15:55 Coffee break	
16:00	<i>Natowitz</i> : Clustering in Low Density Nuclear Matter
17:05	<i>Carstoiu</i> : The ground state of alpha matter
18:00 Break	
18:10	Contributions: <i>Banu, McCleskey, Tabacaru</i>

<b>Tuesday, June 29<sup>th</sup>, 2010</b>	
<b>Morning Session:</b>	
<b>Chair: Suhonen</b>	
9:00	<i>Ejiri</i> : Neutrino Nuclear Response for Neutrino Studies in Nuclei
9:55	<i>Giacomelli</i> : Atmospheric neutrinos and long baseline experiments
10:50 Coffee break	
11:10	<i>Brown</i> : Renormalized Interactions with EDF single-particle basis states and NuShellX@MSU
12:05	<i>Bertulani</i> : Challenges in Nuclear Astrophysics
13:00 Lunch	
<b>Afternoon Session: Nuclear Astrophysics</b>	
<b>Chair: Bonaccorso</b>	
15:00	<i>Cyburt</i> : Nuclear Astrophysics Data Libraries and determining reaction sensitivities
15:55 Coffee break	
16:10	<i>Spitaleri</i> : The Trojan Horse Method
17:05	<i>Pizzone &amp; Tumino</i> : The pole approximation in the study of the ${}^6\text{Li}(d,\alpha){}^4\text{He}$
18:00 Break	
18:10	Contributions: <i>La Cognata, Sparta, Toma</i>

<b>Wednesday, June 30<sup>th</sup>, 2010</b>	
<b>Morning Session: RIB facilities</b>	
<b>Chair: Petrovici</b>	
9:00	<i>T. Motobayashi</i> : The radioactive Isotope Beam Factory at Riken
9:55	<i>Ibrahim</i> : Production of radioactive ion beams by the ISOL method
10:50 Coffee break	
11:10	<i>Majka</i> : FAIR – facility, research program, status of the project
12:05	<i>Horoi</i> : Nuclear Shell Model Analyses and Predictions of Double-Beta Decay Observables
13:00 Lunch	
<b>Afternoon Session: Exotic nuclei</b>	
<b>Chair: Mirea</b>	
15:00	<i>Saastamoinen</i> : Penning trap mass spectrometry of exotic nuclei
15:55 Coffee break	
16:00	<i>A. Petrovici</i> : Self-consistent of coexistence phenomena in medium mass nuclei
17:05	<i>Suhonen</i> : Interplay of particle, nuclear and atomic physics in rare weak decays
18:00 Break	
18:10	Contributions: <i>Mustonen, Ydrefors, Marini, Budaca</i>

<b>Thursday, July 1<sup>st</sup>, 2010, Ses. X</b>	
<b>Morning Session: RIB facilities and instrumentation</b>	
<b>Chair: Horoi</b>	
9:00	<i>Thoennessen</i> : Exploration of the neutron dripline and discovery of new isotopes
9:55	<i>Pinfold</i> : Dirac's dream, the quest for the magnetic moments
10:50 Coffee break	
11:10	<i>Pascovici</i> : Fron-End solutions for large arrays of segmented detectors, beam detectors for degraded beams at HISPEC/DESPEC
12:05	<i>N. Marginean</i> : Gamma spectroscopy and Lifetime measurement techniques at Bucharest TANDEM
13:00 Lunch	
<b>Afternoon Session: continuation</b>	
<b>Chair: Carstoiu</b>	
15:00	<i>Woods</i> : Recent approaches for explosive astrophysical reactions
15:55 Coffee break	
16:00	<i>Negoita</i> : Spherical vs. deformed competition in N=20 and N=28 neutron rich nuclei
17:05	<i>Mirea</i> : Low energy pair breaking mechanism
18:00 Break	
18:10	Contributions: Simmons, Wallace, Saastamoinen

<b>Thursday, July 1<sup>st</sup> 2010 , Ses. Y</b>	
<b>Morning Session: LAGUNA session</b>	
<b>Chair: R. Margineanu</b>	
9:00	<i>F. Von Feilitzsch</i> : Lena, a project for neutrino astronomy and elementary particle physics
9:30	<i>L. Mosca</i> : Possibilities for the LAGUNA projects at the Frejus site
10:00	<i>N. Spooner</i> : LAGUNA and the Boulby site
10:30 Coffee break	
11:00	<i>L. Labarga</i> : About a Gd-dopped water Cherenkov LAGUNA detector
11:30	<i>W. Trzaska</i> : Advantages of locating Large Apparatus studying Grand Unification and Neutrino Astrophysics in Pyhasalmi mine
12:00 Lunch	
<b>Afternoon Session:</b>	
<b>Chair: H. Rebel</b>	
15:00	F. Von Feilitzsch:
15:30	<i>J. Kisiel</i> : SUNLAB – project of the Polish underground laboratory
16:00 Coffee break	
16:30	<i>Lazanu</i> : About the possibility to study neutrino phenomenology at low energy with LAGUNA
17:00	Contributions: <i>Mitrica (30')</i> , <i>Chejneanu (30')</i>

<b>Friday, July 2<sup>nd</sup>, 2010</b>	
<b>Morning Session: HECR &amp; ν</b>	
<b>Chair: Labarga</b>	
9:00	<i>Sima</i> : Restoring the azimuthal symmetry of charged particle lateral density in the range of KASCADE-Grande
9:55	<i>Nishikawa</i> : Neutrino oscillations and long baseline neutrino oscillation experiments, present and future
10:50 Coffee break	
11:10	<i>Mocioiu</i> : Atmospheric neutrinos: background and signal
12:05	<i>Mantovani</i> : Geo-neutrinos: a new probe of Earth's interior
13:00 Lunch	
<b>Afternoon Session:</b>	
<b>Chair: Sima</b>	
15:00	<i>V. Popa</i> : KM3Net – The Birth of a giant
15:55 Coffee break	
16:10	<i>L. Popa</i> : Cosmological perturbations in generalized theories of gravity: implications from Planck and Euclid
17:05	<i>Isar</i> : Time evolution of continuous variable entanglement in open quantum systems
18:00	<i>Bordeanu</i> : Cosmogonic models overview
18:10	<b>Closing</b>