Angela Bonaccorso

Istituto Nazionale di Fisica Nucleare
SEZIONE DI PISA

The Galileo Galilei Institute for Theoretical Physics
Arcetri, Florence

Report on

"Rewriting Nuclear Physics textbooks…." (Pisa 2015),

and on the

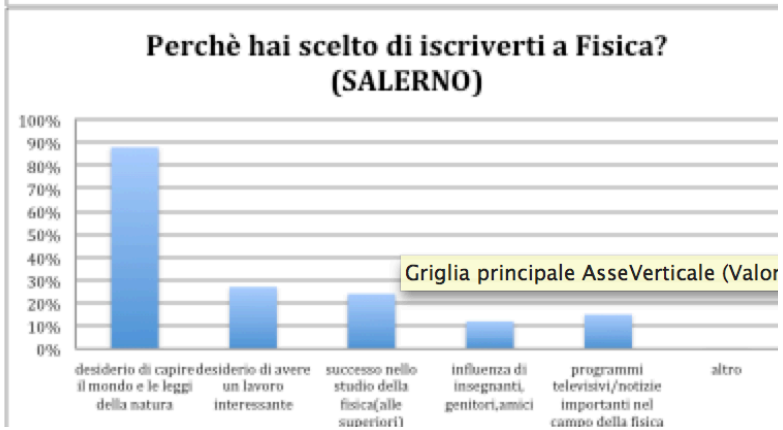
GGI School "Frontiers in Nuclear and Hadronic Physics"

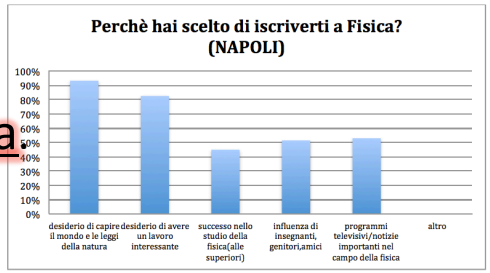
Definizione del problema

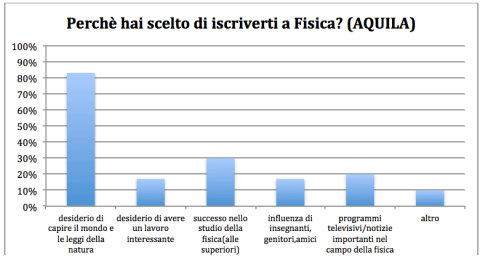
Grande incremento nel n di matricole:
Es: Padova 300, Pisa 200
Fisica attrae per motivi ideali,
ma F. Nucleare è in controtendenza

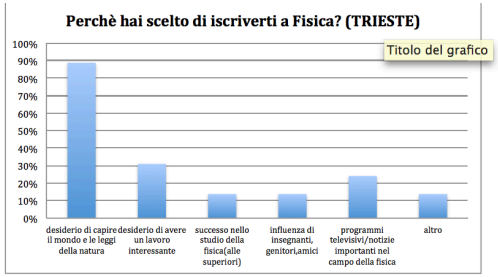
Supponiamo sia un problema di comunicazione…AZIONE

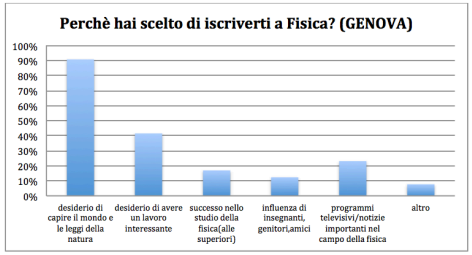
Perché hai scelto di iscriverti a Fisica? (indicare una o più voci)

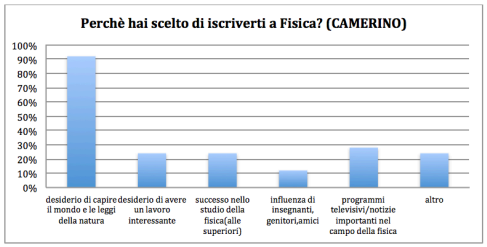


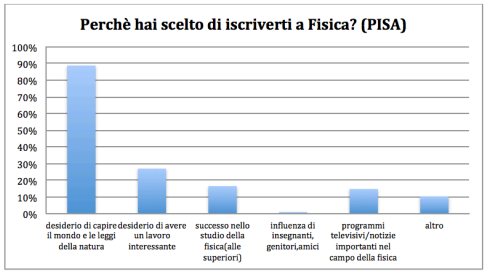


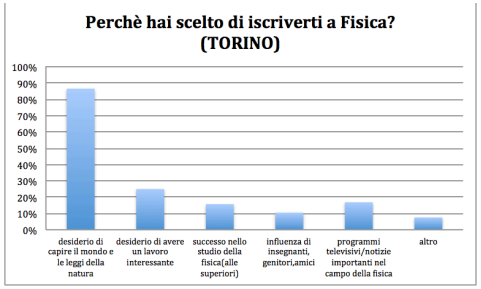


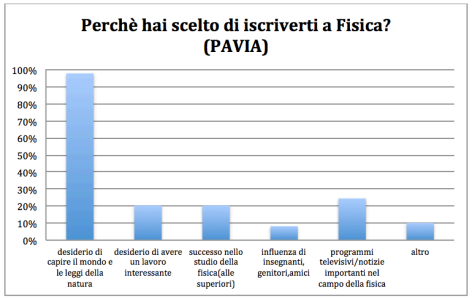












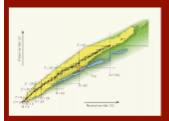
Rewriting Nuclear Physics textbooks
30 years with Radioactive Ion Beam Physics

Pisa (Italy), July 20th – 24th, 2015

Students from all over the world gather together to learn about the wonders of the Physics with Exotic Nuclei

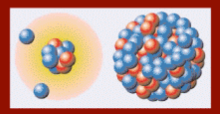
Featuring as special guests

Björn Jonson, Fundamental Physics, Chalmers University of Technology, Göteborg, Sweden
Isao Tanihata, SPANEE and IRCNPC, Beihang University, Beijing, China and RCNP, University of Osaka, Japan



Local Organizing Committee

Angela Bonaccorso, INFN, Pisa (co-chair)
Giovanni Casini, INFN, Firenze (co-chair)
Ignazio Bombaci, Department of Physics, University of Pisa
Laura Elisa Marcucci, Department of Physics, University of Pisa
Alejandro Kievsky, INFN, Pisa
Valeria Rosso, Department of Physics, University of Pisa
Michele Viviani, INFN, Pisa



International Coordination Committee

Andrei Andreyev, University of York, UK
Thomas Aumann, University of Darmstadt and GSI, Darmstadt, Germay
Yorick Blumenfeld, IPN, Orsay, France (chair)
Raquel Crespo, IST/C2TN, Lisbon, Portugal
Pierre Descouvemont, ULB, Bruxelles, Belgium
Hans Fynbo, University of Aahrus, Denmark
Nasser Kalantar, KVI – CAR, Groningen, The Netherlands
Rituparna Kanungo, St Mary's University, Halifax, Canada
Adam Maj, PAN, Krakow, Poland
Jie Meng, Peking University, China
Tohru Motobayashi, RIKEN, Japan
Nigel Orr, LPC, Caen, France
Berta Rubio, IFIC, Valencia, Spain
Thomas Nilsson, Chalmers, Gotegorg, Sweden
Lee Sobotka, Washington University, St Louis, USA
Dario Vretenar, University of Zagreb, Croatia

Italian University Coordination Committee

Mauro Bruno, University of Bologna
Francesco Cappuzzello, University of Catania
Maria Agnese Ciocci, University of Siena
Giampaolo Cò, University of Lecce
Giacomo de Angelis, LNL INFN, Legnaro
Domenico Di Bari, University of Bari
Alessandro Drago, University of Ferrara
Carlotta Giusti, University of Pavia
Nunzio Itaco, University of Napoli
Silvia Leoni, University of Milano
Gabriele Pasquali, University of Firenze
Francesco Pederiva, University of Trento
Giovanni Pollarolo, University of Torino
Francesca Rizzo, University of Catania
Giovanni Salmè, INFN, Roma
Elena Santopinto, INFN, Genova
Sergio Scopetta, University of Perugia
Francesca Soramel, University of Padova
Claudio Spitaleri, University of Catania
Andrea Vitturi, University of Padova

Lecture's Editorial Board

Nicolas Alamanos, IRFU, CEA, Saclay, France
Carlos Bertulani, Texas A&M University, Commerce, Texas, USA
Angela Bracco, University of Milano, Italy
David Brink, University of Oxford, UK

Lucia Lilli and Claudia Tofani, INFN, Pisa (Secretaries): ExoticNuclei2015@pi.infn.it
http://exotic2015.df.unipi.it

Rewriting Nuclear Physics textbooks
30 years with Radioactive Ion Beam Physics

Pisa (Italy), July 20th – 24th, 2015

The scope of the activity is twofold. First we will celebrate 30 years since the first genuine work on radioactive ion beams (RIBs) used to study properties of atomic nuclei. Since then Low Energy Nuclear Physics research fed by experiments at various facilities all over the world has experienced a great revival supported by widespread theoretical efforts which have changed deeply our understanding of nuclei and their interactions.
The second scope of the event is to attract and educate the best possible students introducing them to the wonders of Physics with RIBs. We shall try to convey to such students a view of the rich variety of on-going activities in the field, both experimental and theoretical such that the progresses we have made in the last 30 years can be developed further in the future. The planned activities will be directed towards students who are in the process of deciding what graduate studies to specialize.

Program

- Isao Tanihata (Osaka and Beijing) — How it all started
- Magda Kowalska (CERN, Geneva) — Global properties of atomic nuclei: masses, radii and modern methods to measure them
- Riccardo Raabe (Leuven) — Making radioactive ion beams, detecting reaction products
- Giovanna Benzoni (Milano) — Strong, weak and electromagnetic forces at work in atomic nuclei, decay properties
- Sonia Bacca (TRIUMF, Vancouver) — Structure models: from shell model to ab initio methods
- Stefan Typel (GSI) — Reaction theory
- Robert J. Charity (St Louis) — Resonance phenomena: from compound nucleus decay to proton radioactivity
- Tomohiro Uesaka (RIKEN) — Experimental methods and measured observables with polarized proton targets: understanding spin-orbit
- Alexandre Obertelli (Saclay) — Probing nuclear structure with direct reactions: observables, methods and recent progress with rare isotopes
- Andrea Jungclaus (Madrid) — Single particle versus collectivity, shapes of exotic nuclei
- Lucio Gialanella (Napoli) — Radioactive ion beams in experimental nuclear astrophysics
- Ulli Koester (ILL-Grenoble) — Applications of physics of unstable nuclei to energy, medicine, material science
- Bjorn Jonson (Göteborg) — What's next in Nuclear Physics with RIBs

24/7/2015: Visit to the INFN Legnaro National Laboratory where SPES, the Italian RIB's facility is under construction

Local Organizing Committee

Angela Bonaccorso, INFN, Pisa (co-chair)
Giovanni Casini, INFN, Firenze (co-chair)
Ignazio Bombaci, Department of Physics, University of Pisa
Alejandro Kievsky, INFN, Pisa
Laura Elisa Marcucci, Department of Physics, University of Pisa
Valeria Rosso, Department of Physics, University of Pisa
Michele Viviani, INFN, Pisa

Lucia Lilli and Claudia Tofani, INFN, Pisa (Secretaries): ExoticNuclei2015@pi.infn.it
http://exotic2015.df.unipi.it

Poster designer: Ignazio Bombaci

Pisa, 20-24 July 2015

Scientific Programme

June 20, 2015

8:30-9:15 Registration of students and tutors
9:15-9:30 Practical introduction by Angela Bonaccorso
9:30-11:00 **Parallel introductory lectures by national tutors**

China *Baohua Sun (Beijing)*
Belgium/France *Pierre Descouvemont (Bruxelles)*
Stéphane Grévy (Bordeaux)
Spain *Dolores Cortina-Gil (Santiago de Compostela)*
Antonio Moro (Sevilla)
Canada/Finland/Japan/Germany/UK *Andrei Andreyev (York)*
Stefan Typel (GSI)
Italy *Gianluca Colò (Milano)*
Alessia Di Pietro (INFN-LNS)
Lorenzo Fortunato (Padova)
Jose Javier Valiente Dobon (INFN-LNL)

9:30-11:00 Registrations of Lecturers and Seniors.
11:00-11:20 Coffee break
11:20-11:30 Official Welcome/Opening of the School
Marco Grassi (INFN- Pisa), Ettore Vicari (Università di Pisa), Giovanni Casini (INFN – Firenze)
11:30-12:30 Chair: N. Alamanos (Saclay)
How it all started
Isao Tanihata *(Osaka and Beijing)*
12:30-14:00 Lunch
14:00 -16:00 Chair: A. Bracco (Milano)
Global properties of atomic nuclei: masses, radii and modern methods to measure them
Magda Kowalska *(CERN, Geneva)*
16:00-16:30 Coffee Break
16:30 - 18:30 Chair: N. Itaco (Napoli)
Making radioactive ion beams, detecting reaction products
Riccardo Raabe *(Leuven)*
18:30 – 19:30 TUTORIALS

21/7/2015

9:00-11:00 Chair: E. Santopinto (Genova)
Strong, weak and electromagnetic forces at work in atomic nuclei, decay properties
Giovanna Benzoni (Milano)
11:00-11:30 Coffee break
11:30-13:30 Chair: L. Marcucci (Pisa)
Structure models: from shell model to ab initio methods
Sonia Bacca *(TRIUMF, Vancouver)*
13:30-15:00 Lunch
15:00-17:00 Chair: C. Bertulani (Texas)
Reaction theory
Stefan Typel *(GSI)*
17:00-17:30 Break
17:30-18:45 Chair: T. Motobayashi (RIKEN)
Presentations of country/laboratory activities (15min each)
UK: *A. Andreyev (York)*
Germany: *T. Aumann (Darmstadt)*
France: *Y. Blumenfeld (Orsay)*
Belgium: *R. Raabe (KUL)*
Spain: *B. Rubio (Valencia)*

June 22, 2015

9:00-11:00 Chair: D. M Brink (Oxford)
Resonance phenomena: from compound nucleus decay to proton radioactivity
Robert J. Charity *(St Louis)*
11:00-11:30 Coffee break
11:30-13:30 Chair: T. Aumann (Darmstadt)
Experimental methods and measured observables with polarized proton targets: understanding spin-orbit
Tomohiro Uesaka *(RIKEN)*
13:30-15:00 Lunch
15:00-17:00 Chair: G. Pasquali (Firenze)
Probing nuclear structure with direct reactions: observables, methods and recent progress with rare isotopes
Alexandre Obertelli *(Saclay)*
17:00-17:30 break
17:30-18:15 Chair: M. Viviani (Pisa)
Presentations of country/laboratory activities (15min each)
Japan: *T. Motobayashi (RIKEN)*
China: *Baohua Sun (Beijing)*
Canada: *R. Kanungo (Halifax)*
18:15-19:00 TUTORIALS

23/7/2015

9:00-11:00 Chair: A. Gargano (Napoli)
Single particle versus collectivity, shapes of exotic nuclei
Andrea Jungclaus *(Madrid)*
11:00-11:30 Coffee break
11:30-13:30 Chair: I. Bombaci (Pisa)
Radioactive ion beams in experimental nuclear astrophysics
Lucio Gialanella *(Napoli)*
13:30-15:00 Lunch
15:00-17:00 Chair: V. Rosso (Pisa)
Applications of physics of unstable nuclei to energy, medicine, material science
Ulli Koester *(ILL-Grenoble)*
17:00-17:30 Break
17:30-18:30 Chair: Y. Blumenfeld (Orsay)
What's next in Nuclear Physics with RIBs
Bjorn Jonson (Göteborg)
18:30-19:30 **Final general discussion-tutorial**
20:30-23:00 SOCIAL DINNER

24/7/2015

Visit to the INFN Laboratori Nazionali di Legnaro.
Buses leave Pisa at 8:00h
11:30-12:00 **Presentation of the Laboratory and the SPES project**
G. Fiorentini, Director of the Laboratory
12:00-13:30 Lunch
13:30 14:30 Chair: G. de Angelis (INFN-LNL)
Presentation of the Italian Activities with RIBs.
Theory: M. Colonna (INFN-LNS)
Experiments: G. Casini (INFN-FI)
14:30-16-30 Visit to the Laboratory
17:00 Departure
20:30 Arrival in Pisa

- Isao Tanihata (Osaka & Bejing)
- **How it all started**
- Magda Kowalska *(CERN, Geneva)*
- **Global properties of atomic nuclei: masses, radii and modern methods to measure them**
- **RICCARDO RAABE *(LEUVEN)***
- **Making radioactive ion beams, detecting reaction products**
- **Giovanna Benzoni *(Milano)***
- **Strong, weak and electromagnetic forces at work in atomic nuclei, decay properties**
- **SONIA BACCA *(TRIUMF, VANCOUVER)***
- **Structure models: from shell model to ab initio methods**
- Stefan Typel *(GSI)*
- **Reaction theory**
- Robert J. Charity *(St Louis)*
- **Resonance phenomena: from compound nucleus decay to proton radioactivity**
- Tomohiro Uesaka *(RIKEN)*
- **Experimental methods and measured observables with polarized proton targets: understanding spin-orbit**
- Alexandre Obertelli *(Saclay)*
- **Probing nuclear structure with direct reactions: observables, methods and recent progress with rare isotopes**
- Andrea Jungclaus *(Madrid)*
- **Single particle versus collectivity, shapes of exotic nuclei**
- **Lucio Gialanella *(Napoli)***
- **Radioactive ion beams in experimental nuclear astrophysics**
- Ulli Koester *(ILL-Grenoble)*
- **Applications of physics of unstable nuclei to energy, medicine, material science**
- Bjorn Jonson (Chalmers)
- **What's next in Nuclear Physics with RIBs**

EPJ Plus 2014 Impact factor 1.377

Direct access to: 10 most recent | Browse issues | Topical issues

Focus Point on Rewriting Nuclear Physics textbooks: 30 years with radioactive ion beam physics

N. Alamanos, C. Bertulani, A. Bracco, A. Bonaccorso, D. Brink and G. Casini

Nuclear Physics with RIB's: How it all started
Isao Tanihata
EPJ Plus, 131 4 (2016) 90
Published online: 12 April 2016
DOI: 10.1140/epjp/i2016-16090-x
Abstract | PDF (3.76 MB)

Resonance phenomena: From compound nucleus decay to proton radioactivity
R. J. Charity
EPJ Plus, 131 3 (2016) 63
Published online: 22 March 2016
DOI: 10.1140/epjp/i2016-16063-1
Abstract | PDF (2.00 MB)

Single particle versus collectivity, shapes of exotic nuclei
Andrea Jungclaus
EPJ Plus, 131 3 (2016) 59
Published online: 18 March 2016
DOI: 10.1140/epjp/i2016-16059-9
Abstract | PDF (8.48 MB)

What's next in nuclear physics with RIB's
Björn Jonson
EPJ Plus, 131 2 (2016) 20
Published online: 01 February 2016
DOI: 10.1140/epjp/i2016-16020-0
Abstract | PDF (4.78 MB)

Reaction theory
Stefan Typel
EPJ Plus, 131 1 (2016) 13
Published online: 15 January 2016
DOI: 10.1140/epjp/i2016-16013-y
Abstract | PDF (743 KB)

2 awaiting proof corrections
4 to be submitted

Expected completion Sept. 2016

Hope to publish a volume

Structure models: From shell model to ab initio methods
Sonia Bacca
» **Download PDF** (1493KB) Article:107

Regular Article
Strong, weak and electromagnetic forces at work in atomic nuclei, decay properties
G. Benzoni

- 145 partecipanti
- 90 studenti III e IV anno (**57 italiani**)
- 55 PhD, lectures, colleghi varii.

SPESE

Catering: 18,51ke (pranzi, coffee break, cena sociale)

Cene italiani: 6ke. Alberghi italiani: 8,5ke

Poster&cancelleria, pulizie: 2ke

Totale=35ke

ENTRATE

400eX43=17.2ke Italiani.
Fee=6ke,CSN4=6ke,FI=1.5ke,DFPI=1ke,UNIPI=2.5 ke, IRFU=2ke,INFN=1.5ke, **TOTALE=36.7**

Ringraziamenti: INFN Presidente e Vice Presidente
Prof. F. Ferroni & E. Nappi,

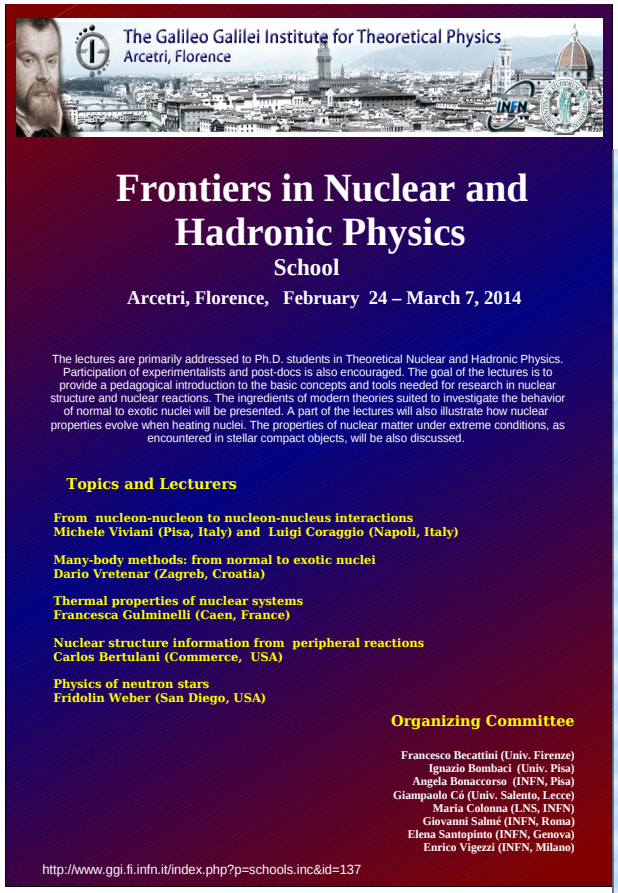
- co-chair G. Casini e il LOC: I. Bombaci per i l posters (e Bob Charity per le due foto), A. Kievsky per la collaborazione finanziaria, L.E. Marcucci, V. Rosso (poster studiare a Pisa), M.Viviani per la loro continua collaborazione ed attenzione.
- Personale tecnico-amministrativo : INFN-Pisa e Dipartmento di Fisica, Università di Pisa Summer Schools e l'azienda DAS, segreterie didattiche che hanno risolto un numero infinito di problemi.
- Direttore (G. Fiorentini) e colleghi del INFN-LNL for per l'ospitalità e supporto finanziario alla visita.

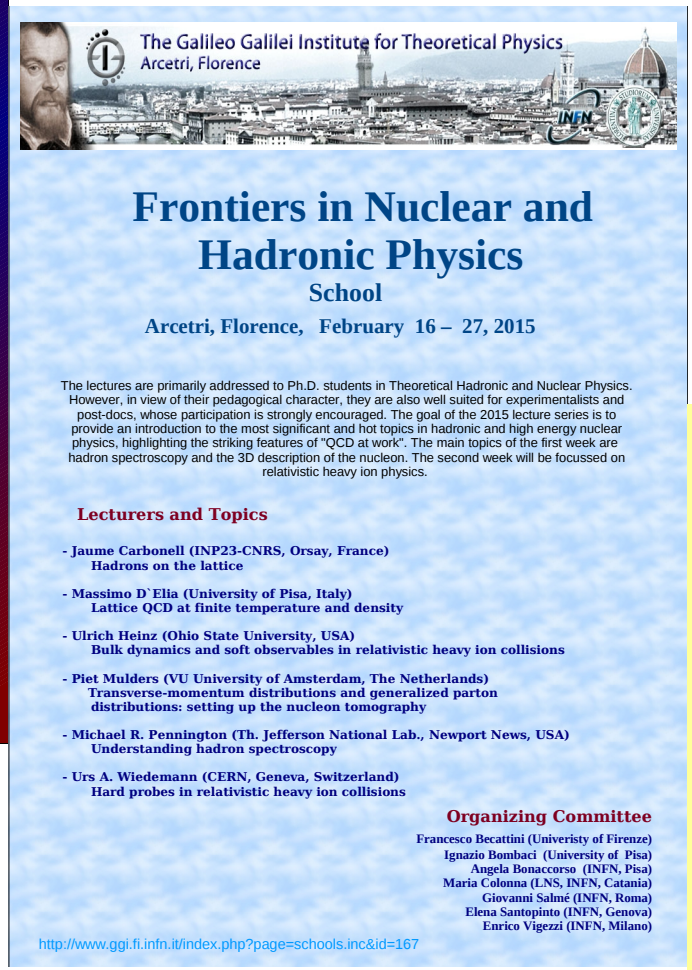
La scuola non avrebbe potuto svolgersi senza la straordinaria buona volontà ed il finanziamento di : Alberto Lerda, presidente CNS IV e il direttore del Departmento di Fisica, Pisa, Università di Pisa,
INFN, Commissione Conferenze e le Sezioni di Firenze and Pisa più le altre che hanno inviato studenti (Catania, LNS, Napoli, Perugia,Roma1,Bologna,Ferrara,Padova,Milano, Genova). Dipartmenti di Fisica di Catania, Lecce, Padova. IRFU-Saclay

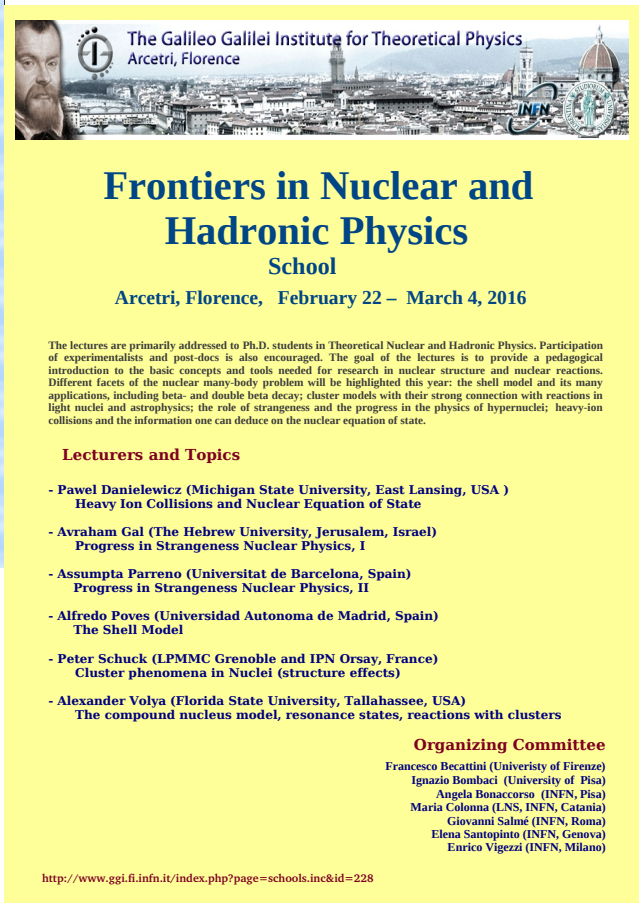
Abbiamo risvegliato l'interesse degli studenti ed abbiamo trovato i soldi

What's next ?

- Summer Schools Università di Pisa
- Vogliamo ripeterla: con quale frequenza?
- Itinerante in Italia?
- …o anche all'estero?
- Cambiare il "focus"? La fisica coi RIBs ha la forte motivazione di SPES (LNL) e FRIB (LNS).







FRANCESCO BECATTINI, IGNAZIO BOMBACI, MARIA COLONNA, GIANNI SALME`, ELENA SANTOPINTO, ENRICO VIGEZZI.

Gianpaolo, Co’, Mariapaola Lombardo,

Attività 2015/2016

Grazie a Stefania De Curtis per le slides

Scuole di Dottorato al GGI:

- **LACES 2015** (23 Nov -11 Dic 2015)

5 organizzatori: Carlo Angelantonj (Torino Univ. & INFN) Pietro Antonio Grassi (Univ. Piemonte Orientale & INFN) Gianluca Grignani (Univ. Perugia & INFN) Luca Griguolo (Univ. Parma & INFN) Domenico Seminara (Univ. Firenze & INFN)

- **GGI Lectures on the Theory of Fundamental Interactions 2016** (11-29 Gennaio 2016)

4 organizzatori: Roberto Contino (CERN & EPFL) Stefania De Curtis (INFN, Firenze) Michele Redi (INFN, Firenze) Enrico Trincherini (SNS & INFN, Pisa)

- **SFT 2016 - Lectures on Statistical Field Theory** (8-19 Febbraio 2016)

4 organizzatori: Andrea Cappelli (INFN, Florence), Filippo Colomo (INFN, Florence), Paul Fendley (University of Oxford), Giuseppe Mussardo (SISSA, Trieste).

- **Frontiers in Nuclear and Hadronic Physics** (22 Feb- 4 Mar 2016)

7 organizzatori: Francesco Becattini (University of Firenze) Ignazio Bombaci (University of Pisa) Angela Bonaccorso (INFN - Pisa) - Maria Colonna (INFN - LNS) Gianni Salmè (INFN - Roma1) Elena Santopinto (INFN - Genova) Enrico Vigezzi (INFN - Milano)

First week: 22 February - 26 February 2016

The compound nucleus model, resonance states, reactions with clusters.
Alexander Volya (Tallahassee) (10h)

Cluster phenomena in nuclei (structure effects).
Peter Schuck (Grenoble & Orsay) (6h)

Progress in Strangeness Nuclear Physics I.
Avraham Gal (Jerusalem) (4h)

Second week: 29 February - 4 March 2016

The shell model.
Alfredo Poves (Madrid). (8h)

Heavy Ion Collisions and Nuclear Equation of State.
Pawel Danielewicz (MSU)(8h)

Progress in Strangeness Nuclear Physics II.
Assumpta Pareno (Barcellona) (4h).

Seminars:

Ivano Lombardo (Università degli Studi di Napoli Federico II and INFN)

"Spectroscopy of Light Nuclei with Low and Medium Energy Nuclear Reactions"

Catalina Curceanu (LNF-INFN)

"Experiments with low-energy kaons at the DAFNE collider in Italy: from strange atoms to strangeness in nuclei and....stars"

Giovanni Casini and Diego Gruyer (INFN-FI)

TBA

Michele Punturo (INFN-Perugia)

"GW150914: the detection of gravitational waves. Results and perspectives"

- **28 studenti (20 italiani) (28 con supporto)**

1/3 sperimentali
2/3 italiani

Materiale didattico disponibile su:
http://www.ggi.fi.infn.it/index.php?page=schools.inc&id=228

PROGRAMME 2015

Lectures of the 1st week

Jaume Carbonell (5 hours): *Hadrons on the lattice*

Piet Mulders (8 hours): *Transverse-momentum distributions and generalized parton distributions: setting up the nucleon tomography*

Michael R. Pennington (8 hours): *Understanding hadron spectroscopy*

Lectures of the 2nd week

Massimo D`Elia (4 hours): *Lattice QCD at finite temperature and density*

Ulrich Heinz (8 hours): *Bulk dynamics and soft observables in relativistic heavy ion collisions*

Urs A. Wiedemann (8 hours): *Hard probes in relativistic heavy ion collisions*

Seminars:

Marco Battaglieri: *Physics at Jlab*

Francesca Bellini: *Soft-particle production in AA collisions*

Davide Caffarri: *Hard Probes in AA and pA collisions*

Marco Maggiora: *BESIII latest experimental results*

Leonardo Milano: *Particle correlations in pA and AA collisions*

Antimo Palano: *Hadronic Physics at BaBar and LHCb*

2014

Michele Viviani (Pisa), Luigi Coraggio (Napoli): (5+5h)
From nucleon-nucleon to nucleon-nucleus
interactions: from light to heavy nuclei

Dario Vretenar (Zagreb): (10h)
Many-body methods: from normal to exotic nuclei

Francesca Gulminelli (Caen): (8h)
Thermal properties of nuclear systems

Carlos Bertulani (Texas, Commerce): (10h)
Nuclear structure information from peripheral reactions

Fridolin Weber (S. Diego): (10h)
Physics of Neutron Stars

Spese FNHP 2016

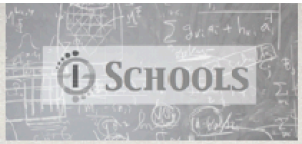
28 studenti (28 con supporto) - 2 settimane

- Alloggio studenti: 7.8k€
- Lunch lecturers + organizers 1.6k€
- Lecturer esterni + organizzatori (collaborazioni+missioni) 7.6k€

Totale: 17.0 k€

+ contributo SIMONS: 1.6 k€

Grazie a Stefania De Curtis per le slides



LACES (36 stud x 3 weeks)	27.5kE
Theory of Fundamental Interactions (67 stud x 3 weeks)	29.3kE
Statistical Field Theory (43 stud x 2 weeks)	18,4kE
Frontiers on Nuclear Physics (28 stud x 2 weeks)	17.0kE
TOTALE	92.2kE
Contributo SIMONS per pranzi	7.5kE
GRAN TOTALE	99.7kE

Assegnazioni CSN4 90kE

Spese FNHP 2015

22 studenti (18 con supporto) - 2 settimane

- Alloggio studenti: 8.9k€
- Lunch lecturers + organizers 0.5k€
- Lecturer esterni + organizzatori (collaborazioni+missioni) 10.4k€

Totale: 19.8 k€

- LACES (32 stud x 3 weeks) 23.6kE
- Theory of Fundamental Interactions (63 stud x 3 weeks) 27.9kE
- Statistical Field Theory (43 stud x 2 weeks) 20.9kE
- Frontiers on Nuclear Physics (22 stud x 2 weeks) 19.8kE

TOTALE	92.2kE
Spese per segretaria (700Euro/week)	7.0kE
GRAN TOTALE	99.2 kE

Frontiers in Nuclear and Hadronic Physics
School
Arcetri, Florence, February 24 – March 7, 2014

Grazie a Stefania De Curtis per le slides

Spese FNHP 2014

23 studenti - 2 settimane

- Alloggio studenti: 5.3k€
- Missioni: 0.4k€
- Lecturer esterni (collaborazioni) 6.0k€
- Organizzatori: 0.3k€

Totale: 12 k€

SCHOOLS

LACES (3 weeks) --- (2013)	16.6kE
Theory of Fundamental Interactions (3 weeks)	22.5KE
Statistical Field Theory (2 weeks)	16.0KE
Frontiers on Nuclear Physics (2 weeks)	12.0KE
TOTALE	67.1KE
Spese per segretaria (700Euro/week)	7.0kE
Spese per "piccoli rinfreschi" (250/week)	2.5kE
GRAN TOTALE	76.6 kE

NOTA: spese di segreteria + rinfreschi coperte da residu

- Exit reports filled by the students ---> satisfaction for the general organization (rooms, meals, offices) and for the level of courses.
Some of them noticed a <u>slight excess in the formal part</u> which however is almost unavoidable in a highly specialized theoretical course.

- Remarks for the future. It would be nice and useful to be able to assure the presence of at least two organizers full time at any moment of the school, including the evenings, to discuss and exchange ideas with the lecturers and the students. Also, find new space for the lunch together.

- A partial support also for the organizers could help !

GRAN SASSO SCIENCE INSTITUTE
CENTER FOR ADVANCED STUDIES
Istituto Nazionale di Fisica Nucleare

An international PhD school and a center for advanced studies in physics, mathematics, computer science and social sciences.

Istituto Nazionale di Fisica Nucleare
Laboratori Nazionali del Gran Sasso

HOME INSTITUTE EDUCATION RESEARCH PEOPLE SEMINARS COMMUNICATION Search...

Faculty

ASTROPARTICLE PHYSICS

MARCUCCI Elisa

Francesco VISSANI

ECT* training program

6 settimane, 40keuro, 30-40 studenti

ECT* Doctoral Training Programme 2012
April 30 - June 15
"The 3-dimensional nucleon structure"

Programme Co-ordinator

Mauro Anselmino (*Università di Torino and INFN*)

Student coordinator and advisor

Georges Ripka (*Saclay and ECT**)

Lecturers and topics

Marco Stratmann (*Brookhaven National Laboratory, USA*)	"QCD at work: from basic principles to current applications"
Markus Diehl (*Deutsches Elektronen-Synchroton DESY, Germany*)	"Theory of hard exclusive and semi-inclusive DIS processes"
Delia Hasch (*INFN, Laboratori Nazionali di Frascati, Italy*)	"Data analysis of hard exclusive and semi-inclusive DIS processes"
Alessandro Bacchetta (*Università di Pavia and INFN, Italy*)	"Phenomenology of 3-dimensional partonic distributions"
Barbara Pasquini (*Università di Pavia and INFN, Italy*)	"Modeling partonic distributions in momentum and configuration space"
Abhay Deshpande (*Stony Brook and RIKEN BNL, USA*)	"Current and future experiments in pp and DIS at $\sqrt{s} < 1$ TeV"

Castello di Trento ("Trnt"), watercolour, 19.8 x 27.7, painted by A. Dürer on his way back from Venice (1495) — British Museum, London.

ECT* Doctoral Training Programme 2015
April 13 - May 22
Computational Nuclear Physics
Hadrons, Nuclei and Dense Matter

Programme Coordinator
Maria Paola Lombardo (INFN)

Students' Coordinator and Advisor
Georges Ripka (Saclay and ECT*)

Local Coordinator
Serena degli Avancini (ECT*)

Lecturers and topics

Thomas Schaefer (*North Carolina State University, USA*)	Strong interactions, QCD and nuclear physics
Tetsuo Hatsuda (*RIKEN, Japan*)	Lattice QCD approach to nuclear physics
Amy Nicholson (*University of California, Berkeley, USA*)	Lattice methods for many body systems
Giuseppina Orlandini (*University of Trento and TIPFA, Italy*)	Ab initio methods: from few to many nucleons
Francesco Pederiva (*University of Trento and TIPFA, Italy*)	Ab initio many-body methods: variational and diffusion Monte Carlo
Morten Hjorth-Jensen (*Michigan State University, USA and University of Oslo, Norway*)	Ab initio many-body methods: configuration interaction theory, many-body perturbation theory and coupled cluster theory

ECT* Doctoral Training Programme 2013
April 15 - May 24
Neutron-rich matter: constraints from nuclear physics and astrophysics

Programme Coordinators
Arturo Polls (*University of Barcelona*) and Achim Schwenk (*TU Darmstadt*)

Student Coordinator and Advisor
Georges Ripka (*Saclay and ECT**)

Lecturers and topics

James Lattimer (*SUNY Stony Brook, USA*)	Physics of neutron stars
Duncan Galloway (*Monash University, Australia*)	Observations of neutron stars and X-ray bursts
Sanjay Reddy (*INT and University of Washington, USA*)	Physics of the neutron star crust
Thomas Janka (*Max Planck Institute for Astrophysics, Germany*)	Neutron stars in astrophysical simulations
Klaus Blaum (*Max Planck Institute for Nuclear Physics, Germany*)	Experimental constraints on neutron-rich systems
Achim Schwenk (*TU Darmstadt, Germany*)	Neutron-rich matter: constraints from nuclear physics and ultracold atoms
Peter Braun-Munzinger (*GSI, Germany*)	Experimental constraints on hot and dense matter
Owe Philipsen (*Universität Frankfurt, Germany*)	Constraints on the phase diagram of quantum chromodynamics
Wolfram Weise (*ECT*, Italy*)	Effective theories of quantum chromodynamics

ECT* Doctoral Training Programme 2014
April 7 - May 16
Heavy Ion Collisions: exploring nuclear matter under extreme conditions

Programme Coordinators
François Gélis (*Saclay*) and Jean-Yves Ollitrault (*Saclay*)

Student Coordinator and Advisor
Georges Ripka (*Saclay and ECT**)

Lecturers and topics

Derek Teaney (*Stony Brook, USA*)	Relativistic hydrodynamics
Guilherme Milhano (*CENTRA, Lisbon & CERN, Switzerland*)	Jets in heavy ion collisions
Gregory Soyez (*Saclay, France*)	Jets in heavy ion collisions
Marco van Leeuwen (*Universiteit Utrecht, Netherlands*)	Experimental techniques
Mikko Laine (*Universität Bern, Switzerland*)	QCD at finite temperature
Dionysis Triantafyllopoulos (*ECT* Trento, Italy*)	Color Glass Condensate
François Gélis (*Saclay, France*)	Color Glass Condensate
Peter Arnold (*University of Virginia, USA*)	Strong coupling techniques

ECT* Doctoral Training Programme 2016
Trento, June 6 - July 15
Nuclear, Neutrino and Relativistic astrophysics

Programme Coordinator
Sanjay Reddy (University of Washington)

Students' Coordinator and Advisor
Georges Ripka (Saclay and ECT*)

Local Coordinator
Serena degli Avancini (ECT*)

Lecturers and topics

Baha Balantekin (*University of Wisconsin-Madison*, USA)	Neutrinos in astrophysics and cosmology
Bruno Giacomazzo (*University of Trento*, Italy)	Neutron star mergers and gravitational waves
Alexander Heger (*Monash University*, Australia)	Stellar evolution and explosions
Thomas Janka (*Max-Planck-Institut für Astrophysik*, Garching, Germany)	Supernova theory and observations
Paolo Mazzali (*Astrophysics Research Institute, Liverpool University*, UK)	Observations of core-collapse supernovae
Friedel Thielemann (*University of Basel*, Switzerland)	Nucleosynthesis
Sanjay Reddy (*University of Washington*, USA)	Neutron stars and dense matter

Applications

Past ECT* TALENT

View our current ECT* TALENT

3 settimane, 30keuro, 20-30 studenti

2015

Few-body methods and nuclear reactions

20 Jul 2015 to 07 Aug 2015

Poster Program Program Registration

Organizers

Giuseppina Orlandini - (University of Trento - Italy) - orlandin@science.unitn.it

Alejandro Kievsky - (INFN Pisa) - alejandro.kievsky@pi.infn.it

2014

Density functional theory and self-consistent methods

14 Jul 2014 to 01 Aug 2014

Poster Program web site

Organizers

Morten Hjorth-Jensen - (Michigan State University - USA and University of Oslo - Norway) - hjensen@nscl.msu.edu

Giuseppina Orlandini - (University of Trento - Italy) - orlandin@science.unitn.it

2012

Computational Many-body Methods for Nuclear Physics

25 Jun 2012 to 13 Jul 2012

web site

Organizers

Jacek Dobaczewski - (Warsaw University (PL)) - Jacek.Dobaczewski@fuw.edu.pl

Morten Hjorth-Jensen - (Michigan State University - USA and University of Oslo - Norway) - hjensen@nscl.msu.edu

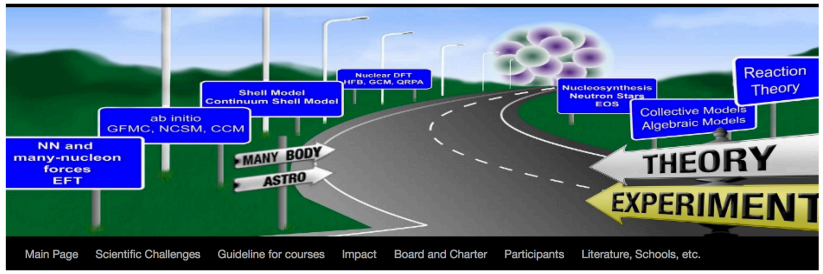
Giuseppina Orlandini - (University of Trento - Italy) - orlandin@science.unitn.it

Francesco Pederiva - (University of Trento) - pederiva@science.unitn.it

Marek Ploszajczak - (GANIL) - ploszajczak@ganil.fr

TALENT: Training in Advanced Low Energy Nuclear Theory

Training the next generation of nuclear physicists



Laboratories and Research centers in Europe

1. ECT*, European Center for Theoretical Studies in Nuclear Physics and related Aereas, Trento, Italy
2. Ganil, Grand Accelerateur D'Ions Lourds, Caen, France
3. GSI Helmholtzzentrum fuer Schwerionenforschung GmbH, Darmstadt, Germany
4. LNS, Laboratori Nazionali del Sud, Catania, Italy

Associate Members and their institutions

- Michael Bender, CENBG and University of Bordeaux, Bordeaux, France
- Maria Colonna, Laboratori Nazionali del Sud, Catania, Italy
- Jacek Dobaczewski, University of Warsaw, Poland and University of Jyväskylä, Finland
- Thomas Duguet, DSM/IRFU/Saclay, France
- Hans Feldmeier, GSI, Darmstadt, Germany
- Antonio Sa Fonseca, University of Lisbon, Lisbon, Portugal
- Christian Forssen, Chalmers, Gøteborg, Sweden
- Francesca Gulminelli University of Basse-Normandie, Caen, France
- Hans-Werner Hammer and Achim Schwenk, University of Darmstadt, Darmstadt, Germany
- Ulf Meissner, University of Bonn, Bonn, Germany
- Paul-Henri Heenen, University of Brussels, Brussels, Belgium
- Morten Hjorth-Jensen, University of Oslo, Oslo, Norway
- Elias Khan, IPN-Orsay and University of Paris-Sud, Paris, France
- Helmut Leeb, Vienna University of Technology, Vienna, Austria
- Antonio Moro, University of Sevilla, Spain
- Frederic Nowacki, IRES, Strasbourg, France
- Giuseppina Orlandini and Francesco Pederiva, University of Trento, Trento, Italy
- Marek Płoszajczak and Piet Van Isacker, GANIL, France
- Alfredo Poves, Universidad Autonoma de Madrid, Madrid, Spain
- Jeff Tostevin, University of Surrey, Surrey, UK
- Dario Vretenar, University of Zagreb, Zagreb, Croatia

EUROSCHOOL ON EXOTIC BEAMS

• Home • About • Current Edition • Registration • Past Editions • Lecture Notes • Photos • BoD Login

23rd EUROSCHOOL ON EXOTIC BEAMS 28th August – 3rd September 2016, Mainz (Germany)

Scope: Summer school intended for PhD students and young post-doctoral researchers working in areas related to radioactive-ion beams.

Lecturers & Topics

- Calin Ur (IFIN-HH/ELI-NP, Romania): "Nuclear physics with gamma beams"
- Alexandre Obertelli (CEA Saclay, France): "Nuclear structure studied with reactions and spectroscopy"
- Isao Tanihata (RCNP Osaka, Japan): "Nuclei at the dripline: halos, unbound states and other exotica"
- Markus Kortelainen (Univ. Jyväskylä, Finland): "Mean field theory"
- Raquel Crespo (Univ. Lisbon, Portugal): "Nuclear reaction theory"
- Peter Dendooven (KVI-CART, The Netherlands): "Nuclear physics techniques for medical applications and imaging"
- Markku Oinonen (Univ. Helsinki, Finland): "Dating methods and recent results"

Organization

Scientific Committee of the Euroschool (BoD):

- Dolores Cortina-Gil, Universidade de Santiago de Compostela, Spain
- Héloïse Goutte, CEA DSM, Saclay, France
- Sotirios Harissopulos, NCSR "Demokritos", Athens, Greece
- Ari Jokinen, University of Jyväskylä, Finland
- Silvia M. Lenzi, University of Padova and INFN, Italy
- Gerda Neyens, KU Leuven, Belgium
- Marek Pfützner, University of Warsaw, Poland
- Andrey Popeko, JINR, Dubna, Russia
- Christoph Scheidenberger, GSI, Darmstadt, Germany (Chair)
- Fabienne Vanalphen, KU Leuven, Belgium (Secretary)
- Dario Vretenar, University of Zagreb, Croatia

Former Board of Directors

- Al-Khallili J. - University of Surrey, United Kingdom
- Aliotta M. - University of Edinburgh, United Kingdom
- Aÿstö J. - University of Jyväskylä, Jyväskylä, Finland
- Gelletly W. - University of Surrey, United Kingdom
- Hansen P. G. - University of Aarhus, Aarhus, Denmark
- Hjorth Jensen M. - University of Oslo, Norway
- Huyse M. - K.U.Leuven, Leuven, Belgium
- Jonson B. - Chalmers University, Göteborg, Sweden
- Leino M. - University of Jyväskylä, Jyväskylä, Finland
- Mittig W. - GANIL, Caen, France
- Mueller A. C. - IPN, Orsay, France
- Münzenberg G. - GSI, Darmstadt, Germany
- Riisager K. - CERN, Switzerland
- Roeckl E. - GSI, Darmstadt, Germany
- Rubio B. - IFIC, Valencia, Spain
- Van Duppen P. - K.U.Leuven, Belgium
- Van Isacker P. - GANIL, France
- Vervier J. - UCL, Louvain-la-Neuve, Belgium
- Vitturi A. - INFN, Italy

LNS contribuisce circa 3ke

Almeno dal 2011 la fisica nucleare non compare

The Union of the Physicists in Bulgaria
South-West University "Neofit Rilski"
8th International Balkan School on Nuclear Physics
July 3rd – 12th, 2012
Blagoevgrad, Bulgaria
Supported by CERN

List of lecturers:

Nicolas Alamanos (*CEA Saclay*)
Ani Aprahamian (*University of Notre Dame*)
Faisal Azaiez (*IPN Orsay*)
Maria Borge (*CSIC Madrid*)
Angela Bracco (*University of Milano*)
Jerry Draayer (*Louisiana State University and SURA*)
Zsolt Fülöp (*ATOMKI Debrecen*)
Peter Hristov (*CERN*)
Kiril Ianakiev (*LANL*)*
Jan Jolie (*University of Cologne*)
Filip Kondev (*ANL*)
Magdalena Kowalska (*CERN*)
Thorsten Kröll (*Technical University Darmstadt*)
Fabienne Kunne (*CERN*)
Georgios Lalazissis (*University of Thessaloniki*)
Marek Lewitowicz (*GANIL*)
Christoph Scheidenberger (*GSI*)
Vassilis Vlachoudis (*CERN*)
Vladimir Melezhik (*JINR Dubna*)
Nicolae Victor Zamfir (*IFIN-HH Bucharest*)

List of invited seminars:

Ismail Boztosun (*Akdeniz University, Antalya*)
Georgi Georgiev (*CSNSM, CNRS*)
Ivan Kojouharov (*GSI*)
Radomira Lozeva (*CSNSM, CNRS*)
Constantin Mihai (*IFIN-HH Bucharest*)
Nalan Özkan (*Kocaeli University*)
Georgi Rainovski (*University of Sofia*)*
Artemis Spyrou (*Michigan State University*)
Efstathios Stiliaris (*University of Athens*)
Deyan Yordanov (*CERN*)

- Grazie ad A. Lerda, D. Dominici e S. De Curtis e lo staff del GGI per la collaborazione.
- Grazie alla comunità per la fiducia accordataci.
- GRAZIE ai miei cari compagni di viaggio.

FRANCESCO BECATTINI, IGNAZIO BOMBACI, MARIA COLONNA, GIANNI SALME`, ELENA SANTOPINTO, ENRICO VIGEZZI.

What’s next?