

EUROSCHOOL ON EXOTIC BEAMS

Registration as from March 1 till May 31, 2023, through the Euroschool website

www.euroschoolonexoticbeams.be

FIRST CIRCULAR

30th edition

EUROSCHOOL

ON EXOTIC BEAMS

2023

AUG.27th-SEPT.2nd

A
SINAIA, ROMANIA



PRESENTATION

The production and use of energetic radioactive beams is a rapidly developing field in nuclear physics. Pioneering experiments are taking place; dedicated new facilities are being built and commissioned; theoretical predictions are refined. The aim of the EUROSCHOOL ON EXOTIC BEAMS is to introduce PhD students and young post-doctoral researchers to this field and also to present recent experimental and theoretical advances.

This year we celebrate the 30th anniversary of the Euroschool!



The Euroschool is an annual event initially funded by the EU and now supported by several funding agencies and large research facilities in Europe. The school started off based at Leuven, Belgium in 1993. Since 2000 it became an itinerant event and it is organized in different European cities (Jyväskylä - 2001, Les Houches – 2002, Valencia - 2003, Surrey - 2004, Mainz - 2005, Trento - 2006, Houlgate – 2007, Piaski – 2008, Leuven – 2009, Santiago de Compostela – 2010, Jyväskylä – 2011, Athens – 2012, Dubna – 2013, Padova – 2014, Dubrovnik – 2015, Mainz – 2016, Cabourg - 2017, Leuven – 2018, Aarhus – 2019. The 2020 edition was cancelled due to the COVID-19 pandemic and the 2021 was organized online. In 2022 the Euroschool was organized in Spain, together with the International Scientific Meeting on Nuclear Physics - La Rábida. This year the school will be held in Sinaia, Romania, from August 27th till September 2nd, 2023.

Each edition of the Euroschool consists of a number of lecture courses given by specialists in the field, starting from a basic level, but also including more advanced seminars. Students are invited to contribute to the school by presenting a poster about their own research work and by being actively involved in the school's practical sessions.

SCHOOL BACKGROUND

More than 3000 different atomic nuclei have been synthesized in laboratory but these represent only a fraction of all possible nuclear species that are expected to exist in nature. The shortest-lived nuclei far from stability are labeled exotic because they cannot be found naturally occurring on Earth, and they are also difficult to be produced experimentally. Even though they occur at the femtometer scale, exotic nuclei do not only provide answers to fundamental scientific questions on the origin of the elements but they are also relevant for macroscopic applications in many areas: low-carbon energy generation; medical diagnosis and treatment; analysis for environmental, engineering, biomedical, geological and cultural studies; etc. The structure of nuclei far from stability can be investigated, in particular, by using radioactive ion beams (RIBs). The development of the first generation of RIB facilities has already opened up new possibilities to probe exotic nuclei. Future advances and access to new regions of the nuclear chart necessitate the advent of new RIB research infrastructure. Key questions addressed by experimental programs also require developing advanced theoretical methods, often coupled to innovative and high-performance computer simulation techniques that also find applications in other areas of science.

This edition of the school will consider a particular kind of exotic beams, high-power laser beams. Recently, relevant advances were achieved in using laser beams as drivers for secondary particle or gamma beams or for fusion ignition. This opens new perspectives for nuclear physics studies and medical or industrial applications.

The school will cover general topics on the physics of exotic nuclei, experimental and theoretical studies of nuclear structure and reaction dynamics, laser-driven nuclear physics and new schemes of ion acceleration, nuclear astrophysics and interdisciplinary applications. Besides the lecture classes, the school will also include practical hands-on sessions during which the participants to the school will be



trained in performing reaction dynamics calculations, data analysis and data simulations. Participants are strongly encouraged to present their own research activity in a poster.

LECTURES

- Elias Khan – Giant resonances and exotic phenomena
- José Antonio Lay Valera – Introduction to reaction theory for exotic nuclei
- Victor Malka – Physics and applications of laser plasma accelerators
- André Sieverding – Neutrino–nucleus reactions and nucleosynthesis in core supernovae
- Katrin Wimmer – Spectroscopy of Exotic Nuclei

Special topics:

- Mike Campbell – Perspectives on Inertial fusion energy – Opportunities and Challenges
- Dan Stutman – Towards medical applications with high power lasers

A detailed program will follow in due course.

VENUE

The **2023** edition of the EUROSCHOOL ON EXOTIC BEAMS will take place in Romania, in the Carpathian Mountains. Hotel International (<https://www.internationalsinaia.ro/>) will be the venue. It is located in Sinaia (<https://en.wikipedia.org/wiki/Sinaia>), a renowned mountain resort at about 45 km from Brasov and 136 km from Bucharest.

REGISTRATION

As from March 1, 2023. The deadline for applications is May 31, 2023

A link to the online application form will be available from March 1st at the Euroschool website www.euroschoolonexoticbeams.be

In order to fulfill the goals of the School, the total number of participants has been limited to 70. Participants will be selected from the pool of applications by the Board of Directors (BoD). Our target participants are mainly PhD students and young post-doctoral researchers.

Selected participants will receive a confirmation by the beginning of June. With the personal token, the participants will have to fill the personal data and confirm the participation online.

Some students might need to obtain a visa to enter the country and therefore it is important to start with this procedure as soon as the confirmation of acceptance is received. Invitation letters can be obtained from the Euroschool secretary (euroschool@kuleuven.be).

EUROschool ON EXOTIC BEAMS

A limited number of travel grants will be available after motivated request. Please fill in the application form that is available on the website at the registration.

REGISTRATION FEE

Registrations will only be confirmed after payment of the registration fee, which amounts to **250 Euro** per student. This **fee includes** lodging in double rooms (bed linen and towels included) with breakfast and lunch during the whole school, coffee breaks, refreshment at the poster session, the welcome reception, the social dinner and the excursion.

All participants are expected to arrive in Bucharest on Sunday, August 27th, 2023, reaching the Bucharest Otopeni Airport. From there, busses will take everyone to Măgurele to visit the Extreme Light Infrastructure – Nuclear Physics (ELI-NP) research center. This is a new research infrastructure of pan-European interest, part of the European Strategy Forum on Research Infrastructures (ESFRI) Roadmap and one of the major facilities in the Nuclear Physics European Collaboration Committee (NuPECC)'s Long Range Plan. The infrastructure with two sources of extreme electromagnetic light, a 2 x 10 PW high power laser system and an intense variable energy gamma-ray system, will address a broad range of scientific research areas from frontier fundamental physics, new nuclear physics and astrophysics to applications in nuclear materials, material science and life sciences. In the afternoon, the participants will be transferred to the school venue by bus.



Closing off the week will be on Saturday, September 2nd, after breakfast, when busses will take all the participants back to the Otopeni airport or downtown Bucharest.

EUROSCHOOL ON EXOTIC BEAMS



BOARD OF DIRECTORS OF THE EUROSCHOOL:

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The email address of the School is euroscool@kuleuven.be

We look forward to meeting you in Romania!