

WP7: Dissemination, Outreach, Innovation

3rd General Assembly, Debrecen
June 2023

Tasks in WP7

Task 7.1 Nuclear Astrophysics Masterclasses (TUD)

Task 7.2 Nuclear Astrophysics Scientific Schools (GANIL/HZDR)

Task 7.3 Nuclear, Astronomy, and Astrophysics Conference Outreach (HZDR)

Task 7.4 Research-Industry Days (UNIPD)

Deliverables and Milestone in WP7

Deliverables

- ✓ D7.1 Two presentations targeting Nat. Funding Authorities and the general public, available on ChETEC-INFRA webpage
- ✓ D7.2 Report on new NPA school plans to EB
- ✓ D7.3 Report to GA on comprehensive plan of nuclear astrophysics schools over the duration of the project
- ✓ D7.4 First Masterclass made available to multipliers in 11 different languages
- D7.5 **Report** to GA on organization and participants of **scientific schools** in the first two years (04/2023)
- D7.6 **Report** on first **model industry day** to the GA and publication on project web page (04/2023)
- D7.7 **Second Masterclass** made available to multipliers in 11 different languages (10/2023)

Milestone

M6 (04/2023) First Nuclear Astrophysics masterclass used by the **first 100 high school students**

Task 7.1 Nuclear Astrophysics Masterclasses

First Masterclass on Nuclear Astrophysics A Journey through the elements <http://mc.chetec-infra.eu/>

- ✓ Available since 08/2022, initially in German and English
- ✓ Training of junior scientists at NPA-X school 09/2022
- ✓ Masterclass was held in Germany several times, 60 high school students reached so far

Open items:

- Translation to local languages by consortium members → **Send translation**, several languages still missing
- → **Hold Masterclass** at your university/research lab or in a school nearby

M6 (04/2023) First Nuclear Astrophysics Masterclass used by the first 100 high school students

Second Masterclass on Stellar Astrophysics

- Under development

More details: see presentation from Hannes Nitsche (Tuesday)





This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101008324 (ChETEC-INFRA).

HZDR
HELMHOLTZ ZENTRUM
DRESDEN ROSSENDORF

Chetec-INFRA 3rd General Assembly
June 07 to June 08
Atomki, Debrecen, Hungary

WP 7 HIGHLIGHTS Nuclear Astrophysics Scientific Schools

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Involved institutions

- Grand Accélérateur National d'Ions Lourds, France
- Helmholtz-Zentrum Dresden-Rossendorf, Germany
- Horia Hulubei National Institute for Physics & Nuclear Engineering, Romania
- Hubert Curien Pluridisciplinary Institute, France
- Kore University of Enna, Italy
- Laboratori Nazionali del Sud, Italy
- Max Planck Institute for Astronomy Heidelberg, Germany
- University of Frankfurt, Germany
- University of Milan, Italy
- University of Oslo, Norway
- University of Padua, Italy
- University of Perugia, Italy
- University of Strasbourg, France
- Uppsala University, Sweden
- Vilnius University, Lithuania



UNIVERSITÀ DEGLI STUDI DI ENNA "KORE"



GOETHE
UNIVERSITÄT
FRANKFURT AM MAIN



UNIVERSITÀ
DEGLI STUDI
DI MILANO



UiO : University of Oslo



UNIVERSITÀ
DEGLI STUDI
DI PADOVA



UNIVERSITÀ DEGLI STUDI
DI PERUGIA



UPPSALA
UNIVERSITET

Vilnius
universitetas



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HZDR

Partner schools of ChETEC-INFRA

New schools

- Intercontinental School on Nuclear Astrophysics
NIC XVII 11-15/09/23

- Nuclear Physics in Astrophysics School

NPA X 29/08 – 03/09/22

- School on observations and spectroscopic tools
ChINOS 24-28/07/23

- **SNAQs** (14)
Schools on Nuclear Astrophysics Questions

+ other schools

i-process 15-19/05/23

MESA 28/08-01/09/23

Well established schools

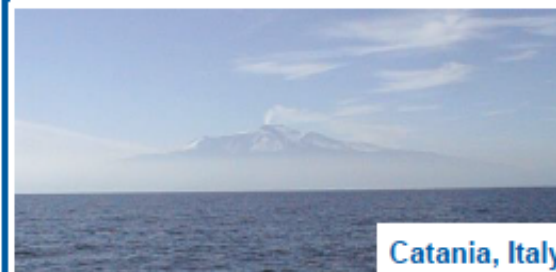
- Carpathian Summer School of Physics

- European Summer School on Experimental Nuclear Astrophysics

- Rußbach School on Nuclear Astrophysics



Sinaia, Romania



Catania, Italy



Rußbach, Austria



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Carpathian Summer School of Physics

CSSP 2020
August 18-27 2021, Sinaia

[Home](#) [1st Circular](#) [Committees](#) [Registration](#) [Information](#) [Venue](#) [Contact](#)



CARPATHIAN SUMMER SCHOOL OF PHYSICS 2020

The CSSP2020 was postponed. Now we **rescheduled it for August 18-27, 2021**. Concerns related to the coronavirus disease (COVID-19), are lower now and the situation is more relaxed in Romania and most of Europe. Please read below and **register** if you are interested

82 participants
(50 students)
34 hours lectures



Organizing Committee:

Chair: Liviu Trache, Mihai Stratulat

Scientific secretary: Alexandra Spiridon

Members: Alexandra Saftoiu, Dan Filipescu, Denisa Crangas, Laurentiu Serban

Soon coming edition of 2023 (July 2- 15)

Rußbach School on Nuclear Astrophysics



17th Rußbach School on Nuclear Astrophysics

2022

41 participants

28 students

2023 (after covid)

64 participants

35 students



European Summer School on Experimental Nuclear Astrophysics

The 11th European Summer School on Experimental Nuclear Astrophysics

Jun 12 – 19, 2022
Catania, Sicily

Enter your search term

Overview

School Poster

Public Lecture

Second Announcement

Scientific Programme

Participant List

Registration

Social Activities

Hotel booking and
Registration fee Payment

Support

✉ www2022@fns.infn.it

✉ lgiccare@fns.infn.it

✉ baria@fns.infn.it

THE 11TH EUROPEAN
SUMMER SCHOOL ON
EXPERIMENTAL NUCLEAR
ASTROPHYSICS

Catania, 12-19 June 2022



Nuclear Physics in Astrophysics School



Nuclear Physics in Astrophysics X School

29 August 2022 to 3 September 2022
CERN, Geneva, Switzerland
[Europe/Paris timezone](#)

Enter your search term



Registration is open until 30 June 2022.

29/08 to 03/09/22 at CERN
Observation night scheduled
Hands on GCE code
Training for NA masterclasses
Public lecture



Nuclear Physics in Astrophysics is an exciting field with many highlights in recent years in observational astronomy, simulating astrophysics, experimental and theoretical nuclear physics. Therefore, training and interaction of young scientists, PhD students and postdocs, are important for further progress and expansion of this community.

We are organizing a Summer School on "Nuclear Physics in Astrophysics" in connection to the International Conference on [Nuclear Physics in Astrophysics X](#). It will be held at [CERN, Geneva, Switzerland](#) from August 29 to September 3, 2022.

Nuclear Physics in Astrophysics - X

Topics will cover the different aspects of Nuclear Physics and Astrophysics from nuclear structure theory to nuclear ground and excited state properties and experimental studies. Nuclear physics is the necessary link between astronomical observations, stellar models and galactic chemical evolution. The impressive progress in astrophysics during the last decades explaining and predicting astronomical scenarios was only possible because of the fruitful interplay between all disciplines. New insights in one field triggered new developments in the other fields. New experimental techniques are typically the response to new predictions and observations. Recent success stories involve exotic objects like merging neutron stars, more abundant red giants or even rather ordinary stars as the Sun.

Highlights of the school include:

- Observation night with the world-class [Nordic Optical Telescope](#) sponsored by ChETEC-INFRA
- Hands-on day with the galactic chemical evolution code [OMEGA](#)
- Training day for Nuclear Astrophysics Masterclasses

ChETEC-INFRA, ChETEC-INFRA will provide financial support to 20 selected students, partially covering local costs (i.e., meals and accommodation).

Moreover, via the global network of networks, [IReNA](#) will provide financial support to USA students.



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i-process Nucleosynthesis Workshop & School

15-19 mai 2023

Poseidonia Beach Hotel, Limassol, Cyprus

Fuseau horaire Europe/Athens





Observational School (ChINOS)

1st ChETEC-INFRA Observational School (ChINOS) 2023

24–28 juil. 2023

IN-PERSON EVENT

Ondřejov Observatory

Fuseau horaire Europe/Prague

Accueil

Inscription

Liste des participants

Organizing Committee

Contact

✉ andreas.korn@physics....

The 1st ChETEC-INFRA Observational School (ChINOS) 2023 will take place from July 24 to 28 (arrival July 23, 2023) at the [Ondřejov Observatory](#) near Prague, Czech Republic. ChINOS has been developed within the European Starting Community [ChETEC-INFRA](#) and focuses on teaching astronomical spectroscopic observing techniques to young scientists (Master's students, PhD students and young postdocs) working in nuclear astrophysics. The school includes three nights of **remotely controlled observations at the Nordic Optical Telescope (NOT)** on La Palma, Spain. Observed spectra are analysed in small teams among the school participants.

The school is open to all young nuclear astrophysicists worldwide. You can apply for the school by filling in the registration page.

Currently we plan to accept 14 students who will be selected based on their motivation letter and letter(s) of recommendation.

ChETEC-INFRA funds are available to support selected students for lodging (shared apartments at the Observatory) and meals. Travel expenses have to be covered by their home institutions. Statements in this regard can be made in the registration form.



Ondřejov Observatory
Prague, Czech Republic
3 nights observation at the NOT telescope
Soon coming 24-28/07/23

🕒 **Commence le** 24 juil. 2023, 07:00
Fin le 28 juil. 2023, 17:00
Europe/Prague

📍 Ondřejov Observatory

👤 [Andreas Korn](#)



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SNAQs: Schools on Nuclear Astrophysics Questions



A virtual school format discussing questions related to nuclear astrophysics

14 Alternatively organized by one of the director of the 3 schools of Carpathian, Catania and Russbach.

Organizing committee:

Rosanna **Depalo** (*Università degli Studi di Milano, Italy*)

Camilla Juul **Hansen** (*Johann Wolfgang Goethe-Universität, Germany*)

Marcel **Heine** (*Hubert Curien Pluridisciplinary Institute, France*)

Ann-Cecilie **Larsen** (*University of Oslo, Norway*)

Andreas **Korn** (*Uppsala University, Sweden*)

Arūnas **Kučinskas** (*Vilnius University, Lithuania*)

Sara **Palmerini** (*University of Perugia, Italy*)

Gianluca **Pizzone** (*Laboratori Nazionali del Sud, Italy*)

Konrad **Schmidt** (*Helmholtz-Zentrum Dresden-Rossendorf, Germany*)

Olivier **Sorlin** (*Grand Accélérateur National d'Ions Lourds, France*)

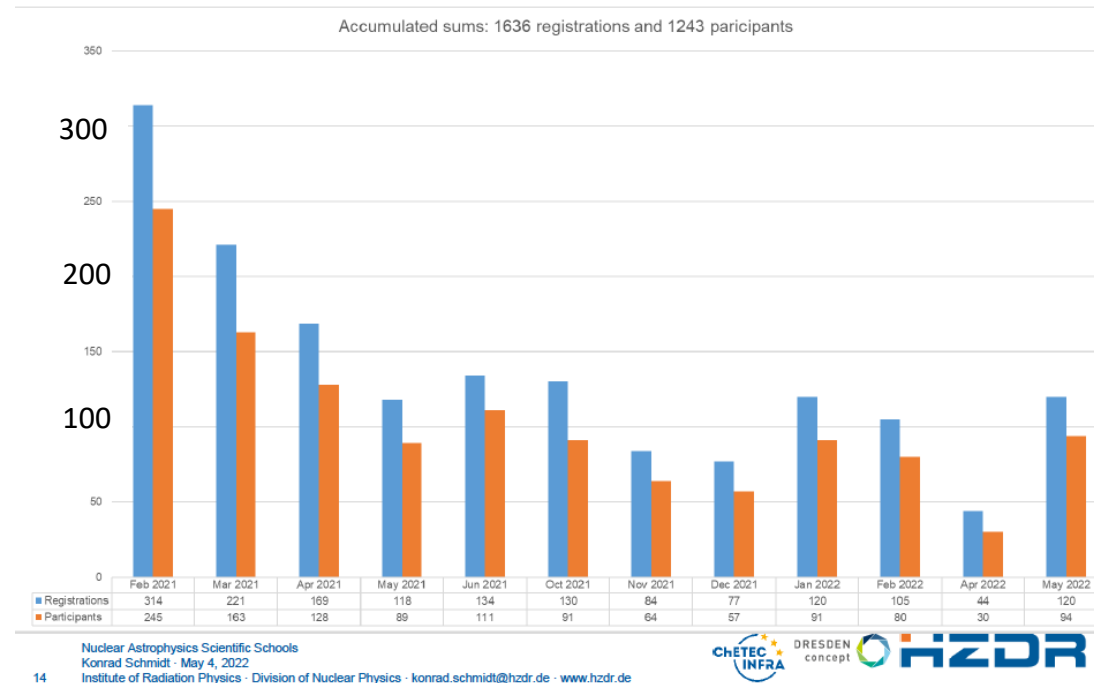
Livius **Trache** (*Horia Hulubei National Institute for Physics & NE, Romania*)

Aurora **Tumino** (*Kore University of Enna, Italy*)

Usually 2-3 speakers with moderators for questions.

Reached up to 250 participants during Covid, each month at beginning
Stopped/reduced when in-person meetings restarted

SNAQs stats – registrations and participants



Task 7.3 Nuclear, Astronomy, and Astrophysics Conference Outreach

Sets of slides (or 1-slide), e.g.

ChETEC-INFRA at a glance, Transnational Access with ChETEC-INFRA

For various target groups:

- Research communities
- General public
- National funding authorities

Roll-up banner, poster

ChETEC-INFRA was **strongly presented** at:

- all schools (SNAQs, Sinaia, Russbach, Catania, CERN)
- shared topical meeting of IReNA and ChETEC-INFRA (“Nuclear reaction measurements in Underground Laboratories”, Rome, April 2022)
- 2022 “Frontiers in Nuclear Astrophysics” Meeting and IReNA Day (South Bend, USA, May 2022)
- Astrophysics with Radioactive Isotopes (Budapest, June 2022)
- CELLAR community meeting of Underground Laboratories (Dresden, November 2022)
- SDSS-V/IReNA Science Festival (Leuven, April 2023)

Presentations	
ChETEC-INFRA presentations template	ChETEC-INFRA-Template.pptx
	Download
ChETEC-INFRA general information slides	ChETEC-INFRA_v4.pdf
	Download
ChETEC-INFRA presentation for the general public	General-Public-v2.pdf
	Download
ChETEC-INFRA presentation for national funding authorities	National-Funding-Authorities-v3.pdf
	Download
ChETEC-INFRA at a glance – single slide presentation	ChETEC-INFRA-at-a-glance.pdf
	Download
Transnational Access – single slide presentation	ChETEC-INFRA-TNA-facilities.pdf
	Download

<https://www.chetec-infra.eu/about/presentations/>

TASK 7.4 - RESEARCH – INDUSTRY DAYS

- **WG members:** UNIPD, HZDR, INFN, TUD
- **Aim:** coordination by UNIPD and INFN of an industry outreach and innovation promotion activity -> achieve a model/standard industry day (UNIPD) to be shared with other laboratories (HZDR for example can be the next)
- **Test Case:** using the neutron detector topic (JRA1) as example. To this end, indicate a neutron detector school to be supported

FIRST INDUSTRY DAY

Test School: 4th SUMMER SCHOOL on Neutron Detectors and Related Applications NDRA-2022, 30th June – 4th July, 2022. Riva del Garda, Trento, Italy.

Continuing in its tradition, the aim of the school is to illustrate principles, methodologies and most recent applications of neutron detection technologies.

Target: The school is addressed to PhD students, Post-Docs and young researchers with backgrounds in Engineering and Physics.

Topics:

- Neutron interaction with materials.
- Physics of neutron detectors.
- Materials for neutron detection.
- Monte Carlo simulation.
- Gas detectors for neutrons.
- Neutron sources.
- Neutrons in medicine, energy and environment.

ORGANIZATION OF THE DAY

<i>Sunday afternoon</i>	INDUSTRIAL DAY – sponsored by ChETEC-INFRA EU project
14.00-15.00	Richard Hall-Wilton (<i>S&D Center, FBK, Italy</i>) <u>Neutron Sources.</u>
15.00-16.00	Richard Hall-Wilton (<i>S&D Center, FBK, Italy</i>) <u>Detectors for Spallation Sources.</u>
16.00-17.00	<i>Coffee Break + Poster session</i>
17.00-18.30	Industrial presentations A. Caciolli (<i>University of Padova</i>) <u>The CHETEC-INFRA project.</u> P. Schotanus (<i>SCIONIX</i>) <u>Relation of public research with industrial partners.</u> Yuri Venturini (<i>CAEN</i>) <u>New digital acquisition solutions for neutron detectors and applications.</u>
20.00	Informal Discussion with Industrial Partners

NOTE: Additional talks related to university research for industrial application were planned but deleted due to last time problems of selected speakers

OUTCOME

Participants: about 50 PhD students and 15 lecturers (probably due to the slow restarting after pandemic contingency)

Strong connection of the school topic (neutron detectors) with the work of WP3

The talks topic were selected to show connections between research and industries and make an overview on the different approaches to R&D and interconnection possibilities

The industrial partners were selected among SME that are not only producing components but also collaborating in research developments

THE IMPORTANCE OF THE SME PARTNER LIST:

LASER ZENTRUM HANNOVER E.V.

CINEL

SANDIA

SCIONIX [Detectors]

CAEN [Electronics]

FBK Trento [Silicon]

Micron Semiconductor Limited (Lancing, UK): [silicon] Mirion(Canberra): [HPGe]

TNE (Italy) [HPGe]

AMETEK-ORTEC

Pfeiffer-Vacuum

VACOM GmbH

Swagelok

Cryo-Anlagenbau

LECROY Telemeter

Pfeiffer-Vacuum

EMIOS Vakuum

EIE (Italy)

MERO/M3 (US) (mechanics of big dimension)

Medialario (Italy) optics, mirror

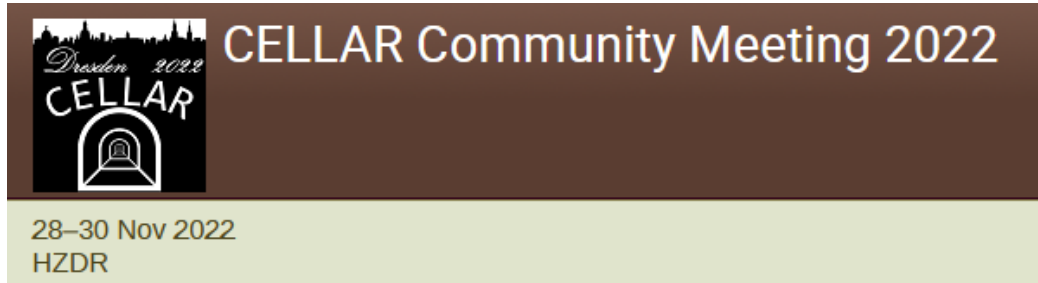
Fraunhofer (Germany)

ZAOT (Italy) mirror coating

Many of them already contacted successfully for the n-cap COST project

A continuous updated list would be important to be present in our website (private?) to help future applications to regional or EU calls

INDUSTRY PARTNERS AND INNOVATION SESSION / EXHIBITION AT CELLAR COMMUNITY MEETING (DRESDEN)



The European underground physics laboratories community has been driving progress in a number of domains.

[...]

In recent years, a number of technical advances [...] have led to significant advances in sensitivity.

The three-day workshop (Monday noon until Wednesday noon) will provide an update on recent progress in the field and **network the related community, including also innovation partners from industry.**

[...]



A POSSIBLE NEXT INDUSTRY DAY

Where? HZDR

How? The first industry day is a model and the organization of the day can be hired for the new industry

Who? we hope that the participation of more partners can be also achieved

Improvements? Suggestions?:

- Unfortunately, due to technical reasons, a Q&A pool was not used last time but it could be implemented to monitor better the achieved results
- ...?

Outlook

Task 7.1 Nuclear Astrophysics Masterclasses

- Masterclass on Stellar Astrophysics under development
- Will be presented at ChINOS Observational School next month

> Translate to your local language

> Roll out MC at your institute

Task 7.2 Nuclear Astrophysics Scientific Schools

- ChINOS Observational School, July 24-28
- <https://events.hifis.net/event/729/>

Task 7.3 Nuclear, Astronomy, and Astrophysics Conference Outreach

- ongoing
- Various slides at <https://www.chetec-infra.eu/about/presentations/>

> Use sets of slides from website

Task 7.4 Research-Industry Days

- Planning next industry day at HZDR