

Romania activities CERN@70:
Magurele Science and Technology
Summer School
(22'th of August - 5'th of September)

CERN70 meeting, 12'th of September 2024

Adam Jinaru - on behalf of the NPCs (Anca Ghinescu, Florin Dorian Buzatu)

Magurele Science and Technology Summer School: 22th of August - 5 September 2024

- 7th edition already
- 17 research themes for many research areas for high-school students
- CERN@70 inserted activities include particle physics theoretical presentations + practical work (research activities): 4 CERN70 themes
- experiments involved: LHCb, ALICE, n_TOF+ISOLDE and DUNE
- a period of 2 weeks
- 71 high-school students present onsite (16 on CERN related themes)
- 70 mentors
- 25 students as volunteers



posters at the Faculty of Physics entrance + in the conference room

Magurele Science and Technology Summer School: sites

- Indico page:

<https://indico.cern.ch/event/1415304/>

- Official site:

<https://mscitech.educatiepentrustiinta.ro/>

The screenshot shows the Indico event page for the "School of Science and Technology". The event is scheduled from August 22, 2024, 8:00 AM to September 5, 2024, 7:00 PM in Europe/Bucharest. The location is Magurele. The description states that the school offers up to 15-20 research themes for high-school students, with CERN@70 inspired activities including particle physics presentations, practical work, and lectures. The event schedule is as follows:

Date	Time	Event	Duration
THURSDAY, AUGUST 22	4:00 PM - 9:00 PM	Events: Participants arrival	
	5:00 PM	Welcoming, The Summer School	2h 45m
FRIDAY, AUGUST 23	9:00 AM - 10:00 AM	Romania@CERN Speaker: Calin Alexa (PITHH@CERN)	1h
	10:00 AM - 11:00 AM	An overview of the nuclear security initiatives at IFIN-HH Alexandru Beresoiu (IFIN-HH)	1h
	11:00 AM - 11:30 AM	Break	30m
	11:30 AM - 12:15 PM	Guests panel Representatives of research and education institutions involved in the Summer School program	45m

The screenshot shows the official website for the "Școala de vară de Știință și Tehnologie de la Măgurele" (Summer School of Science and Technology of Magurele). The website features a purple header with navigation links: ACASA, ELEVI, PROFESORI, ARHIVA. The main content area has a green background with a large illustration of a tree where the branches and leaves are composed of various scientific and technological icons, including a microscope, a globe, a computer monitor, a book, a lightbulb, a gear, a DNA helix, a rocket, a satellite, a microscope, a book, a lightbulb, a gear, a DNA helix, a rocket, and a satellite. The text on the page reads:

ȘCOALA DE VARĂ DE ȘTIINȚĂ ȘI TEHNOLOGIE DE LA MĂGURELE
22 august - 5 septembrie 2024

Școala de vară de Știință și Tehnologie de la Măgurele
Ediția a VII-a 2024, 22 august - 5 septembrie

Science and Technology Summer School: the opening

23'th of August CERN70 presentation: "Romania@CERN" (1h30min)

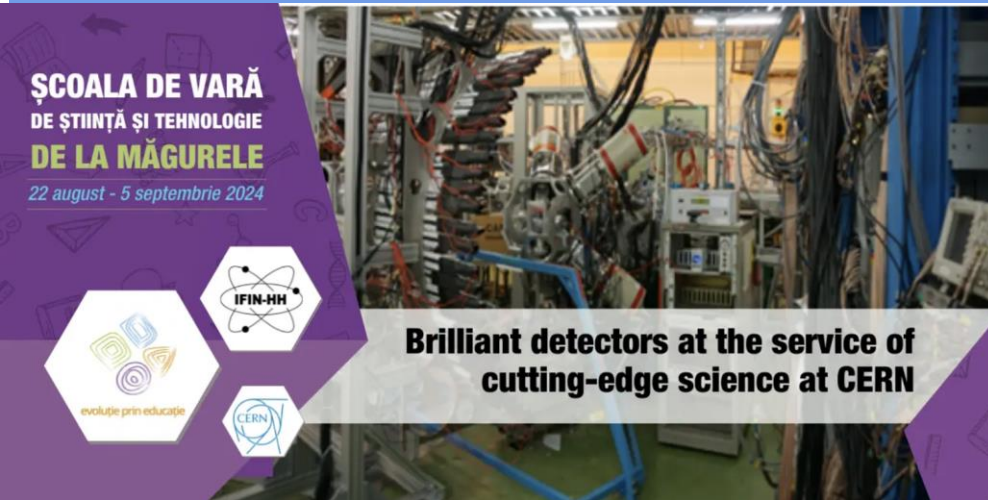
presenter: Călin Alexa (head of the ATLAS project in Romania)

- Ro participation@CERN, CERN collaborations of our country, CERN member states, CERN mission, fundamental physics, SM presentation
- Particle accelerators, technology transfer, particle detection principles, GRID, FCC
- Q&A for students - interactive way!

Guests panel and school programme presentation followed.



CERN70 themes: n_TOF + ISOLDE experiments

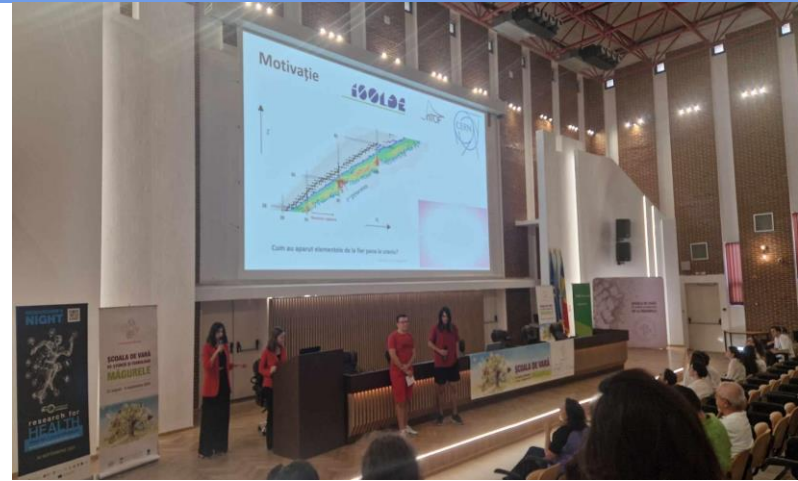
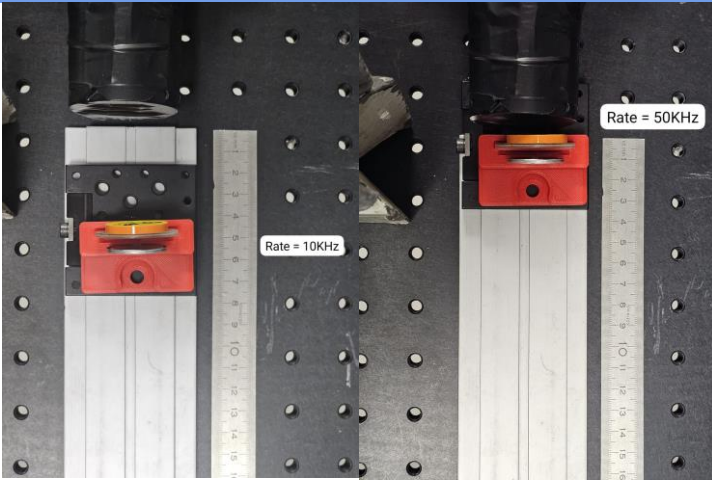


Coordinators: Cristina Petrone, Marian Boromiza, George Pata, Aman Gandhi, Răzvan Lică, Alexandru Negreț (IFIN-HH) - thanks for the pictures!

Activities:

1. Introduction in the topic of **nuclear physics at CERN**: presentation of the main scientific topics of ISOLDE and n_TOF. Short introduction on **gamma spectroscopy**, description of a **spectroscopic chain**, basic experimental techniques
2. Experimental activity - **data taking**: characterization of one – or several LaBr₃ detectors that will be used at n_TOF and ISOLDE under various counting rates and photomultiplier high-voltage values
3. Experimental activity - **data analysis**: spectra analysis and calibration, integration of gamma peaks
4. Data interpretation and dissemination: **interpretation of the results**, conclusions, preparation of the final presentation.

CERN70 themes: ISOLDE, n_TOF experiments



Basic idea of the activities: description of some LaBr₃ (Lanthanum Bromide Scintillation) detectors behaviour with the increasing counting rate (at n_TOF the beam is very intense)

CERN70 themes: LHCb experiment



**ȘCOALA DE VARĂ
DE ȘTIINȚĂ ȘI TEHNOLOGIE
DE LA MĂGURELE**
22 august - 5 septembrie 2024

**Monitorizarea fondului de radiații și parametrii
de mediu în laboratoarele științifice**

IFIN-HH

evolue prin educație



Coordinators: Florin Maciuc, Cristian-Constantin Rădulescu, Lucian-Nicolae Cojocariu, Alex Grecu, Vlad Lupușoru, George-Cătălin Șalavarin, Vlad-Mihai Plăcintă (IFIN-HH)

Activities:

1. Theoretical notions: **indoor environment parameters monitoring** from home/work buildings, regulations and standards regarding limits, effects on the human body, hardware and software architecture of the **monitoring platform**, research infrastructure specific to the LHCb Romania Group;
2. Practical concepts: use of a prototype experimental platform for **data acquisition, analysis and comparative interpretation of measurements**, design and implementation of a **house model on a 3D printer**, hardware and software implementation for a **mini-system that monitors the limits of some environmental parameters** and different elements that act to reduce the exceeded values.

CERN70 themes: LHCb experiment



Final presentation: data analysis from 4 places: LHCb cluster, basement optical sensors laboratory, office level 1 for data analysis, control chamber of 3 MeV TANDEM accelerator. They also built a monitoring microsystem!

CERN70 themes: ALICE experiment

ȘCOALA DE VARĂ DE ȘTIINȚĂ ȘI TEHNOLOGIE DE LA MĂGURELE
22 august - 5 septembrie 2024



Investigarea datelor ALICE (CERN)

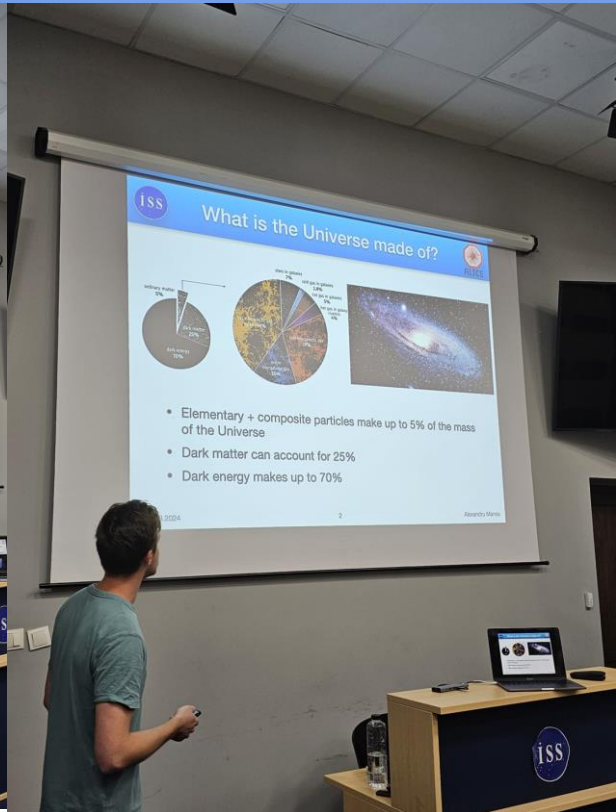
ALICE
Run 3 Pb-Pb
 $\sqrt{s_{NN}} = 5.36$ TeV
27 September 2023, 08:00

ISS INSTITUTUL NAȚIONAL DE ȘTIINȚĂ ȘI TEHNOLOGIE
ifa

evoluție prin educație

CERN

Coordinators: Alexandru-Florin Dobrin, Oana Ristea, Andrea Danu, Catalin Ristea, Alexandru Manea, Catalina Brandibur, Maria Linc (ISS) - thanks for the pictures!



Activities:

- 1) Heavy-ion collisions, ALICE detector, QGP concepts presentations
- 2) Hand-on: AMPT (MC) generations for heavy ion collisions specific for the ALICE experiment, ROOT analyses

CERN70 themes: ALICE experiment

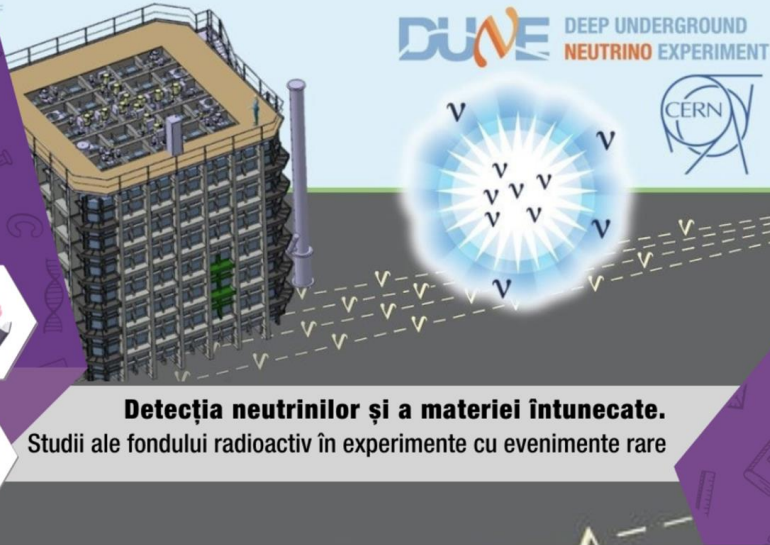


Final presentation: results for heavy ion collisions simulations (e.g. p_T spectra for different collision centralities)

CERN70 themes: DUNE experiment

ȘCOALA DE VARĂ
DE ȘTIINȚĂ ȘI TEHNOLOGIE
DE LA MĂGURELE

22 august - 5 septembrie 2024



Detectia neutrinelor și a materiei întunecate.
Studii ale fondului radioactiv în experimente cu evenimente rare



Coordinators: Lect. Dr. Mihaela PARVU, Prof. Dr. Ionel LAZANU, Denis BARBU (UB-FF)
- thanks for the pictures!

Activities:

- 1) **bubble chambers** (qualitative analysis, then quantitative: measuring masses, momenta, energies) then visualizing similar processes, but with **electric signal detectors**
- 1) **Bkg sources, cosmic radiation, radioactive decays** as bkg sources when looking for rare particles; about rocks (composition, radioactive elements)
- 2) **MiniPIX chambers** for cosmic rays, rocks and minerals analyses

CERN70 themes: DUNE experiment



Final presentation: about dark matter, Dune detector + they also constructed a Wilson Cloud Chamber from scratch!

Science and Technology Summer School: Then and after

Press before: Univ. of Bucharest, Agerpress, Edupedu, EduVox

<https://unibuc.ro/incep-inscrierile-pentru-a-saptea-editie-a-scolii-de-vara-de-stiinta-si-tehnologie-de-la-magurele-msciteh/>

<https://www.agerpres.ro/agerpres/2024/08/21/scoala-de-vara-de-stiinta-si-tehnologie-de-la-magurele-se-desfasoara-intre-22-august-si-5-septembrie--1343665>

<https://www.edupedu.ro/inscrieri-deschise-pentru-scoala-de-vara-de-la-magurele-care-se-desfasoara-in-22-august-5-septembrie-2024-la-care-sunt-asteptati-elevi-de-liceu-si-profesori-de-stiinte-unde-se-fac-inscrie/>

<https://eduvox.ro/inscrieri-la-scoala-de-vara-de-stiinta-si-tehnologie-de-la-magurele-msciteh-editia-2024/>

Afterwards:

<https://blog.msciteh.cest.ro/>

<https://www.scoala9.ro/vcum-a-fost-la-scoala-de-vara-de-la-magurele-anatoare-de-asteroizi-cartarea-radacinilor-copacilor-orientare-montana/2019>

A newsletter circulating by e-mail to hundreds of people about the event