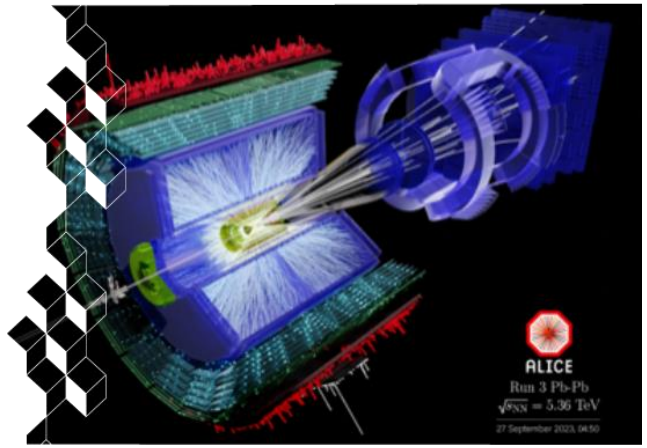
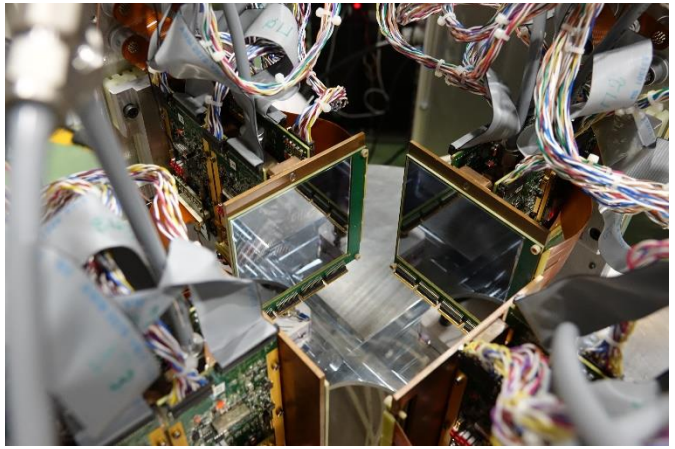
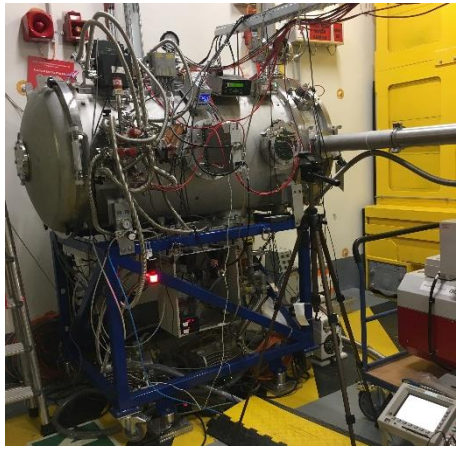
Some opening words from CEA

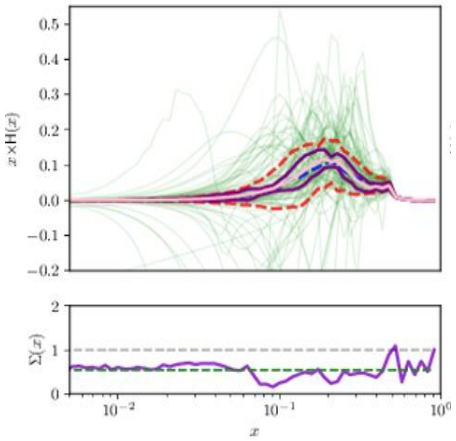
Hervé MOUTARDE

22 September 2025



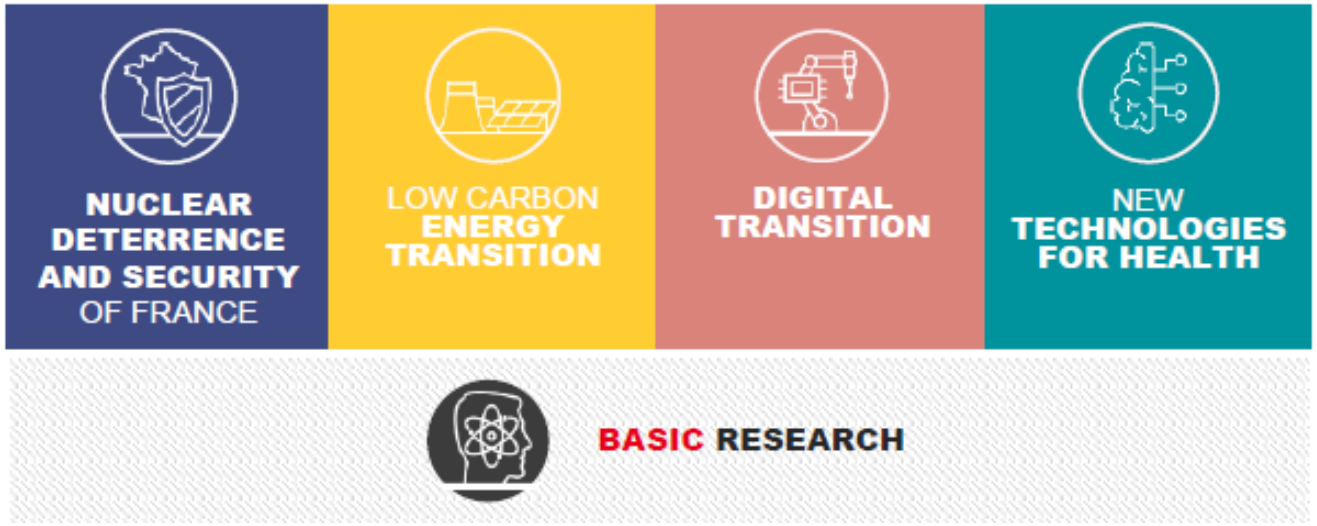




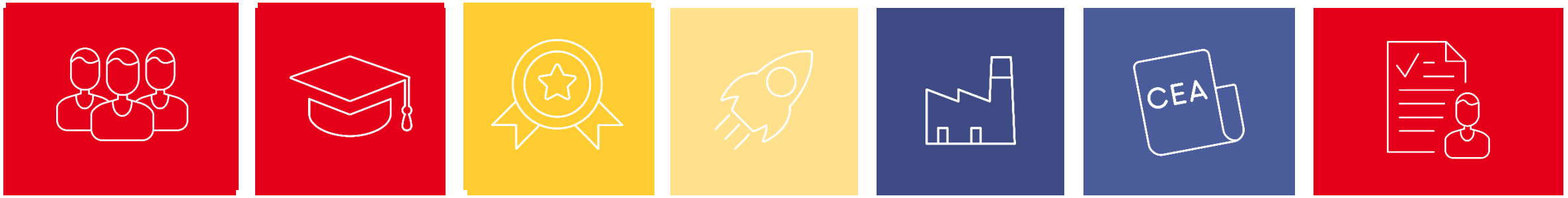


Created in 1945 to master the use of nuclear energy

- **CEA** conducts **research** and delivers **innovative technologies** that meet **society needs.**
- Scientific and technical objectives organized in **4 areas which all benefit from basic research activities.**



CEA key figures



>22,100
EMPLOYEES

1600
PHD or POST DOCS

>640
PRIORITY PATENT FILLING PER YEAR

260
CREATED START-UPS
Since 1972

>700
INDUSTRIAL PARTNERS

>4,700
PUBLICATIONS PER YEAR

>100,000
JOBS CREATED
(direct, undirect and induced) *

2024 figures
* *Estimated from EARTO Economic Footprint Study of 15 RTOs in 2024*

- First research patent filling research organization **in France** and **in Europe**.
- First research organization in top 100 **global innovators** (Clarivate).

Science: > 4700 publications/year

- 65% international copublications
- 45% in fundamental research

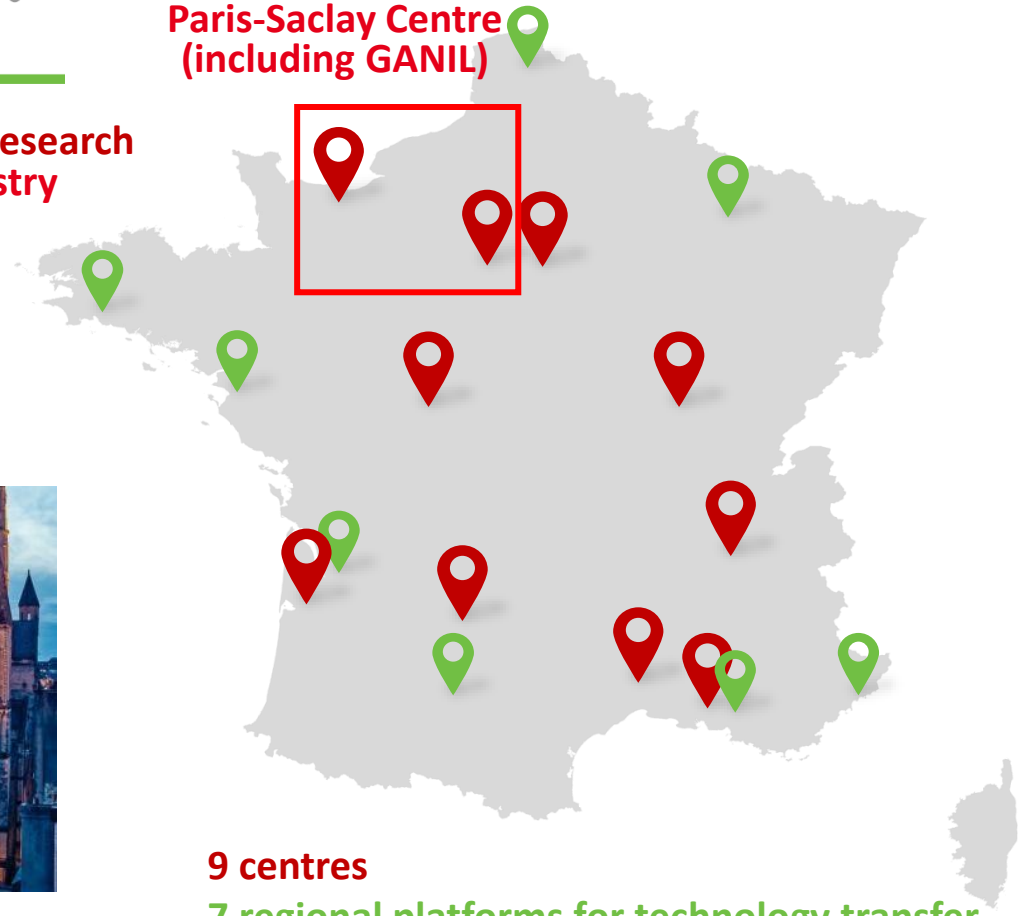
CEA at a glance

Defence and security

Nuclear and renewable energy

Fundamental research

Technology research for industry

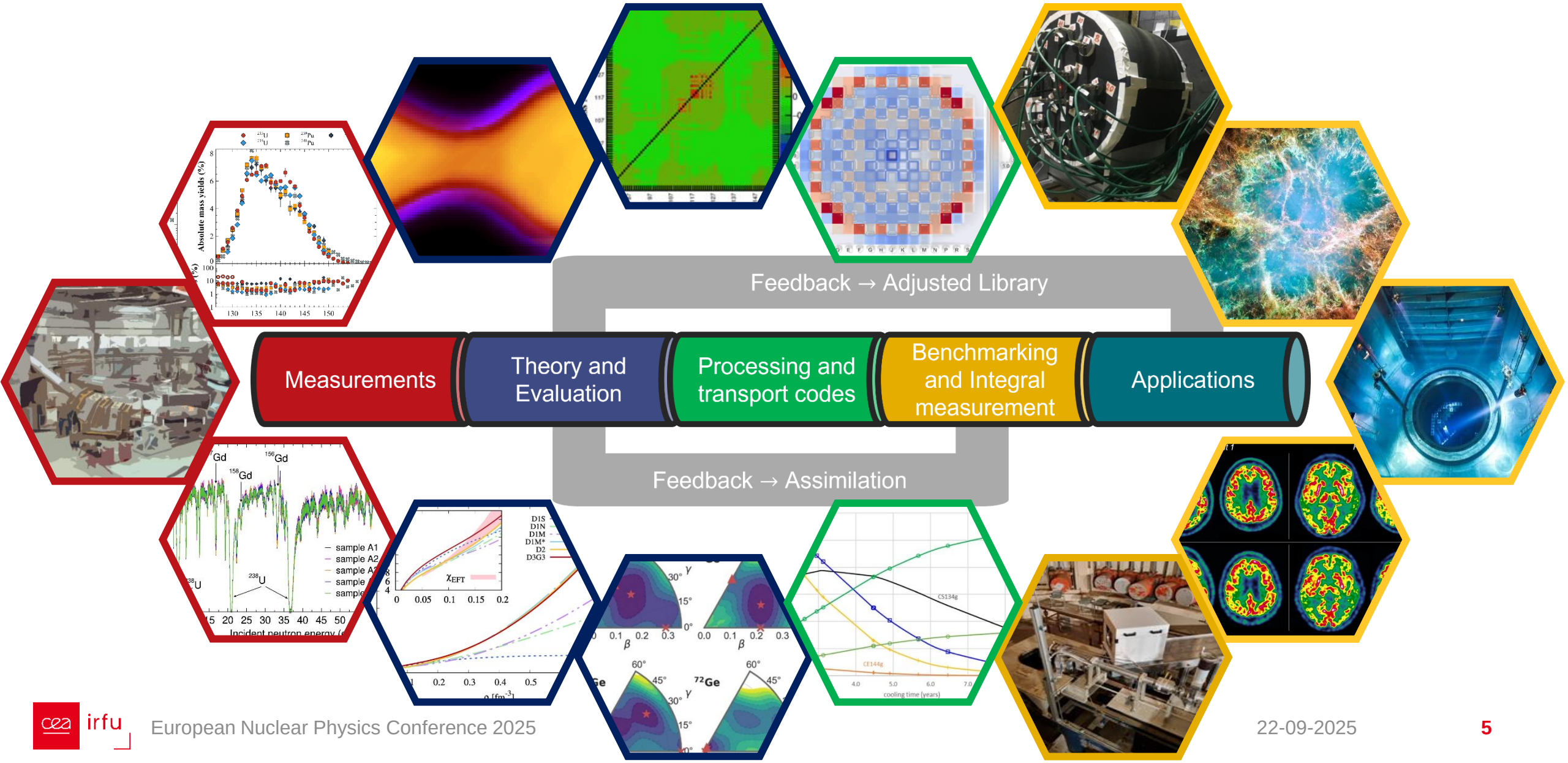


This conference: **27 participants from 3 divisions**

9 centres

7 regional platforms for technology transfer

Nuclear data evaluation pipeline



Strategy : from basic to applied nuclear physics

Experimental and theoretical **studies of QCD at DRF**

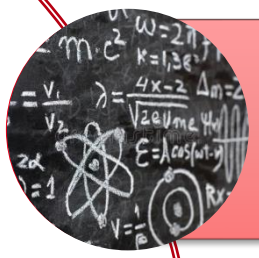
- Hadron physics
- Strongly interacting matter

DAM

DRF DES

Simulation
Statistical data analysis
Artificial intelligence

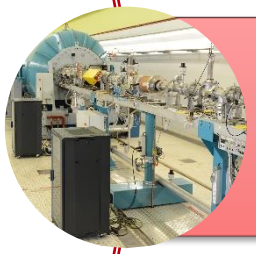
HPC
Quantum computing



Theory

- Modeling: ab initio, microscopic, effective or reaction models for evaluation.
- Description of fission.

More precision
Less compensation



Experiments

- Discriminating, innovating, multi-observables.
- Differential ou integral.
- Study of the fission process.

Need for applications

Data

- Developpement and maintenance of codes for the processing of nuclear data.
- Management of database.

Impact studies

IRFU at DRF

Institute of research into the fundamental laws of the Universe

IRFU

Head: Franck Sabatié

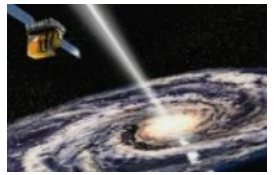
Fundamental Research division

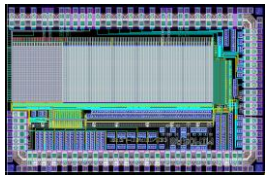
Accelerator, cryogenics and magnetism

DACM

Astrophysics

DAp



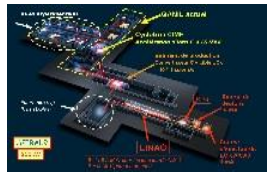


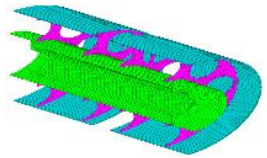
Electronics, detectors and computing

DEDIP

Nuclear physics

DPhN





System engineering

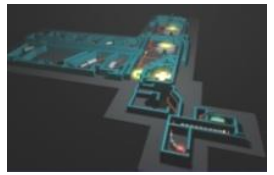
DIS

Particle physics

DPhP

Grand accélérateur national d'ions lourds

GANIL



About 1000 staff members

- 2/3 permanent
- 1/3 fixed-term and PhD

Missions of IRFU

- **Carry out technological and fundamental research** within the framework of CEA's missions, in order to explore the fundamental laws of the universe, from the smallest scales (elementary constituents, nuclear matter) to the largest (energy content and structure of the universe).
- **Apply our technological innovations** to major national or international projects: MRI or fusion magnets, accelerators and neutron sources, medical imaging, etc.
- With two specificities due to IRFU's size and the strong integration of its departments:
  - **Ability to cover the entire research chain**: theory, experiment proposal, simulation, design, construction, operation, data analysis, phenomenology and communication.
  - **Ability to manage large, innovative and complex projects**: accelerators, magnets, detectors.

Nuclear physics, from quarks to nuclei

Nuclear physics department

- **Nucleon structure**
- **Quark gluon plasma**
- **Nucleus structure**
- **Nuclear reactions and applications**

Theory

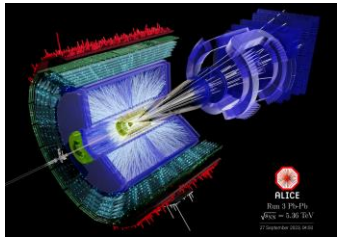
- Model building
- Phenomenology
- Computing codes

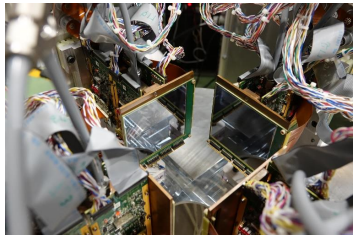
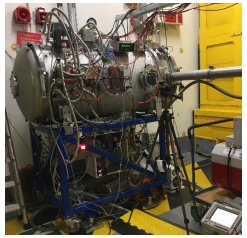
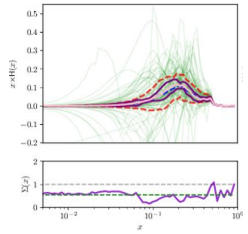
Experiments

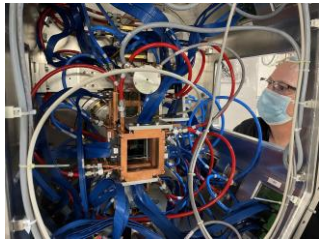
- Detector R&D
- Design and data taking
- Data analysis

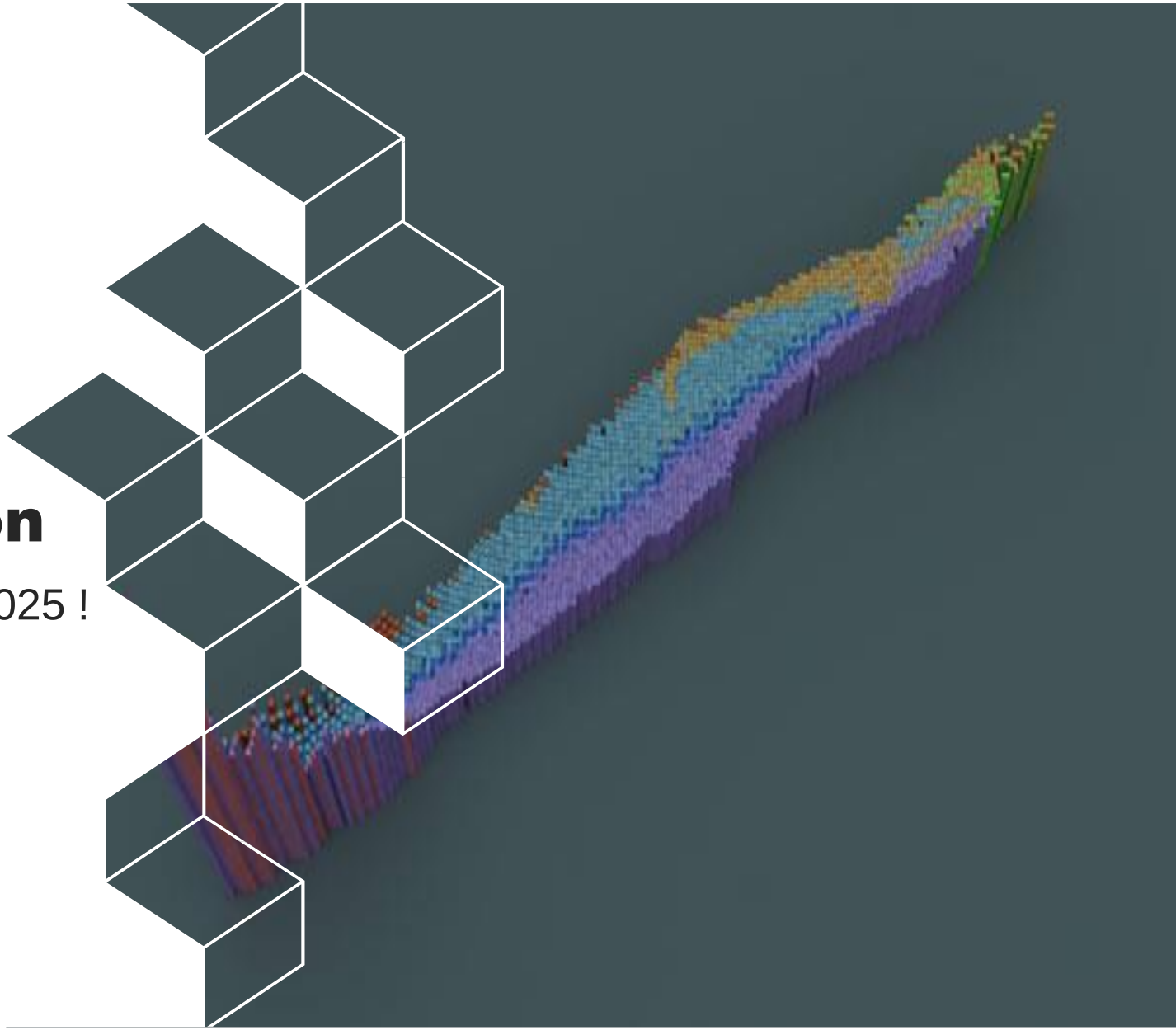
Applications

- Nuclear data evaluation
- Compact neutron sources
- Beyond nuclear physics: neutrinos and gravitation







Thanks for your attention

Wishing you a very successful EuNPC 2025 !

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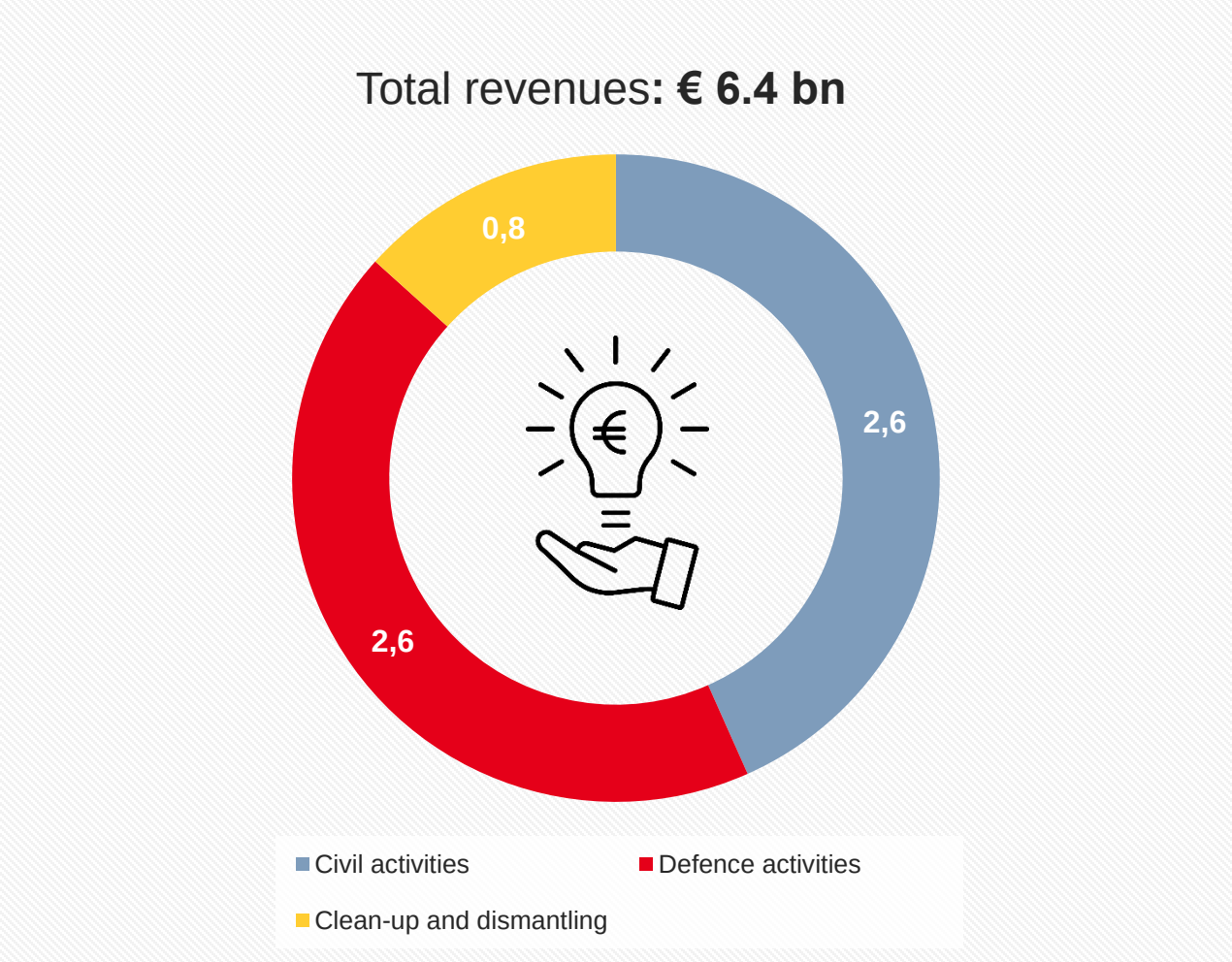
Appendix

CEA resources and basic research missions



Expenditures 2024 for civil activities

Nuclear and renewable energy	**770 M€**
Digital transition	**620 M€**
Technologies for health	**160 M€**
Basic research	**370 M€**
Support, security, safety, teaching	**830 M€**

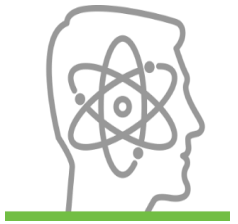
- **EXPLORATORY RESEARCH AT THE VERY BOUNDARIES OF KNOWLEDGE,** particularly in physics, chemistry, materials and biology.
- **UPSTREAM RESEARCH AS PART OF THE CEA'S TECHNOLOGICAL ROADMAPS** in the fields of energy, climate, environment, digital technology and healthcare.
- **INSTRUMENTAL RESEARCH AND CONTRIBUTION** to major national and international infrastructures.

CEA and its Fundamental Research Division

Defence and security

Nuclear and renewable energy

Technology research for industry



Fundamental research

2 550
CEA PERMANENT STAFF MEMBERS

1 200
EXTERNAL CONTRIBUTORS

1 560
FIXED-TERM EMPLOYEES

36
LABORATORIES

127
RECIPIENTS OF ERC GRANTS

3 900
SCIENTIFIC PUBLICATIONS PER YEAR

545
ACTIVE PATENTS

47
START-UPS

CEA centres (all divisions)

9 centres

7 regional platforms for technology transfer