

Instrument team:



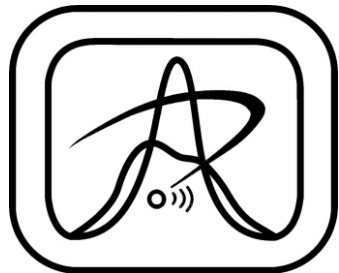
Consortium:



EXPO: proposed M-class mission

Benedikt Bergmann on behalf of

Astronomical Institute of the CAS (scientific part) and IEAP CTU
(instrument development & backend electronics)



Astronomický
ústav
AV ČR

The Enhanced X-ray Polarimetry Observatory (EXPO)

- ESA M8 Mission candidate
- Lead: Paolo Soffitta (INAF/IAPS – IT)
- Czech Involvement: ASU CAS (science), IEAP CTU (instrumentation development, backend electronics)
- Successor of the revolutionary IXPE mission but with advanced physics capability:
 - Large energy band (2-32 keV)
 - Fast repointing (SWIFT-like, tens of sec.)
 - Larger effective area and higher duty cycle for 3x increased statistics
 - Novel instrument design with higher data rate capability and reduced background

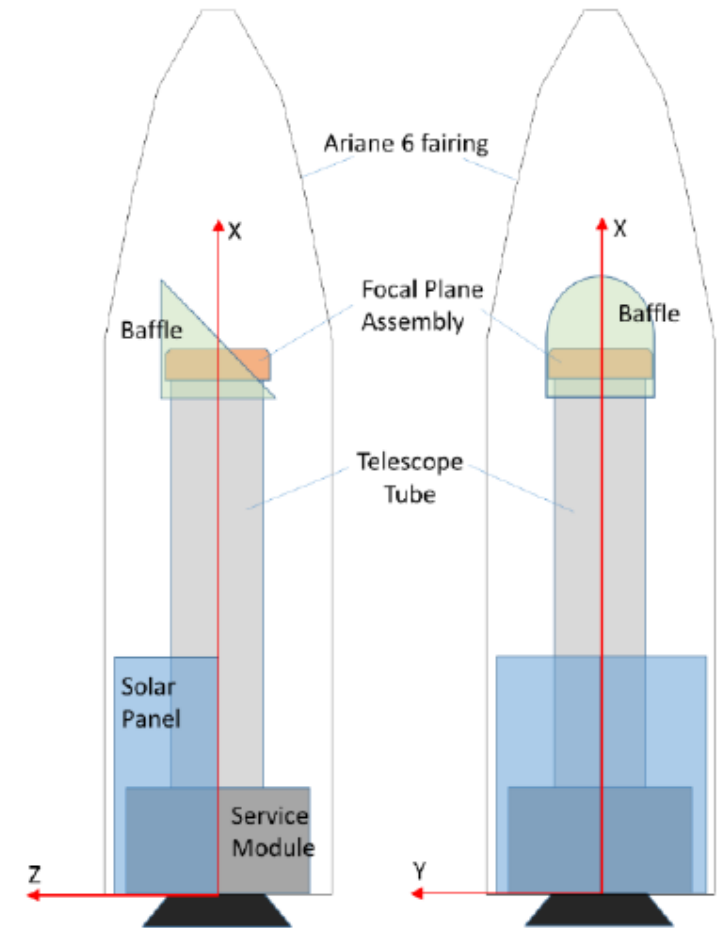
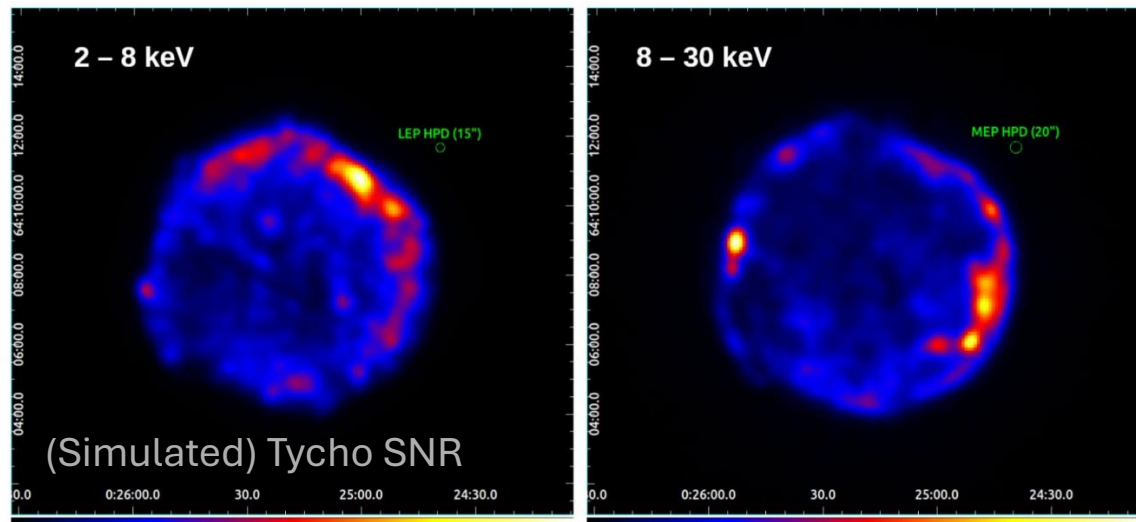


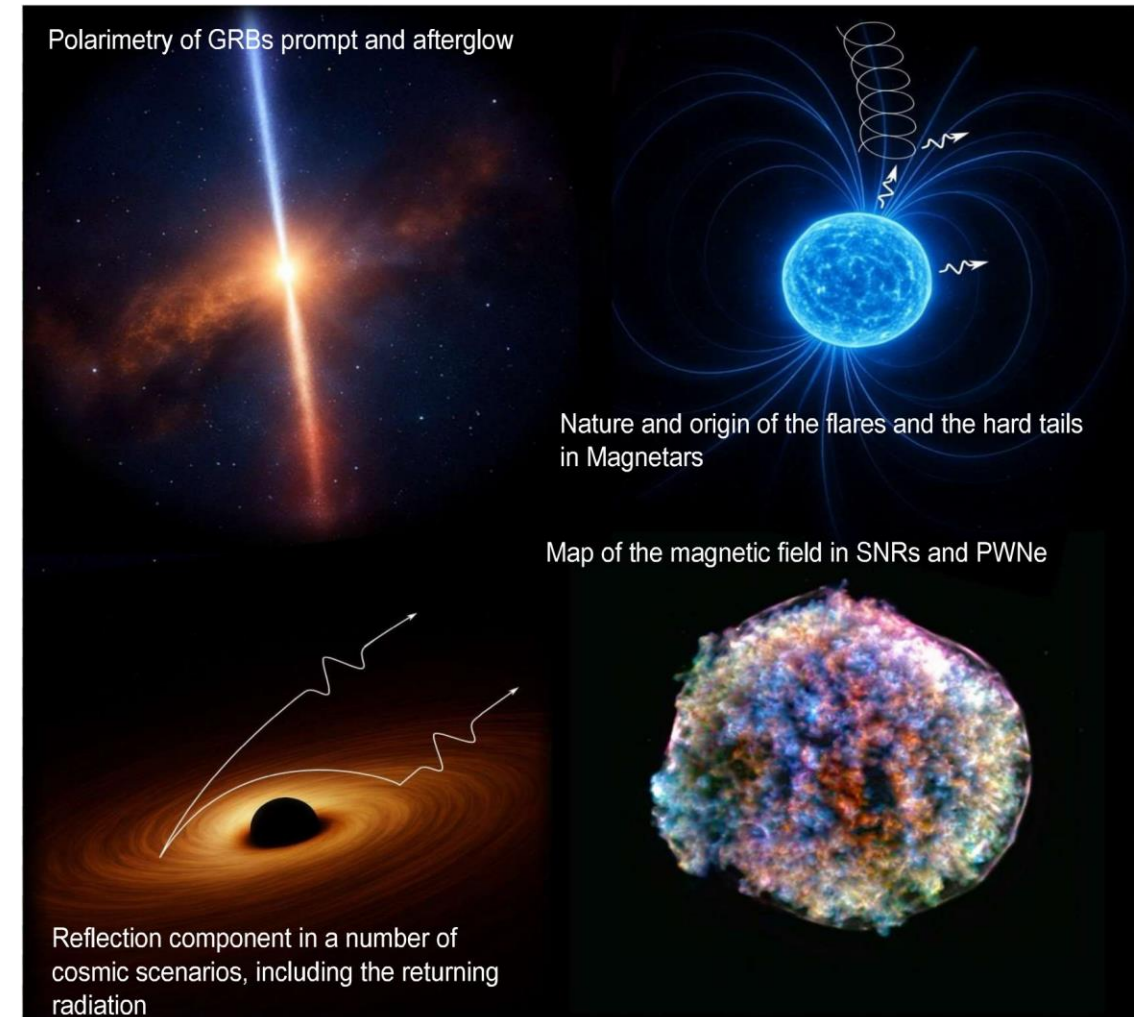
Figure 4 Expo in the fairing of the Ariane 6 launcher

EXPO – Science Cases ASU

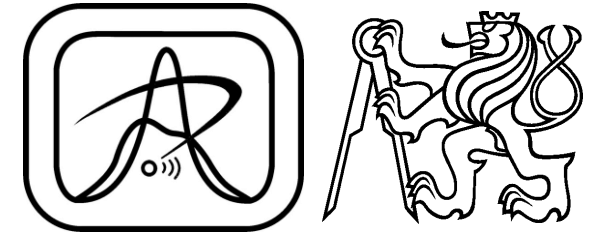
- X-rays allow for studies the physics in **extreme astrophysical environments** (GRBs, supernova remnants, accreting black holes, neutron stars, magnetars, ...)
- X-ray polarimetry measurement provides **unique insights into the geometry of these structures** (structure of matter, magnetic fields, orientation of components, testing QED effects, ...)



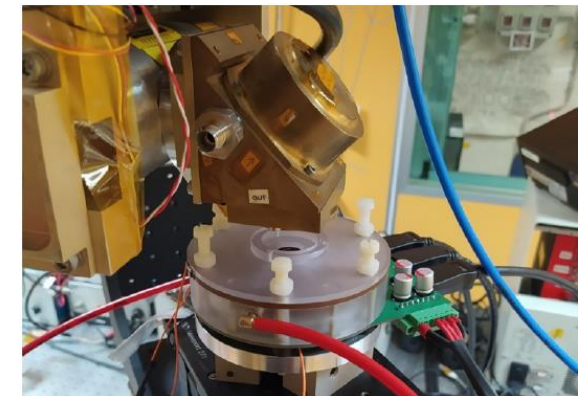
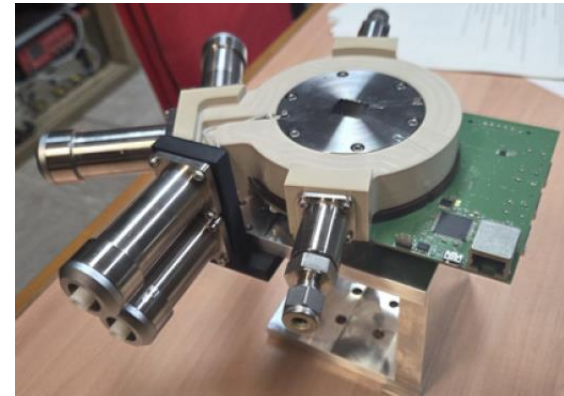
The wider energy band polarimetry can be performed above the iron line observing the non thermal emission only.



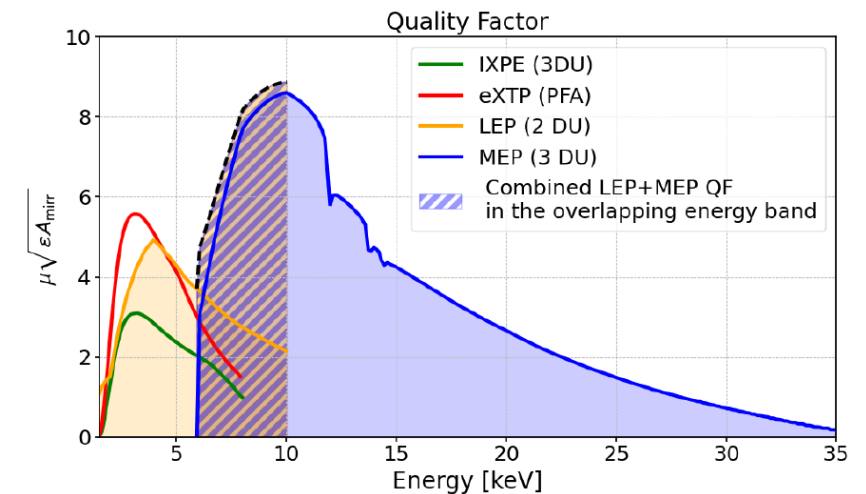
EXPO - Low and medium energy photoelectric polarimeters



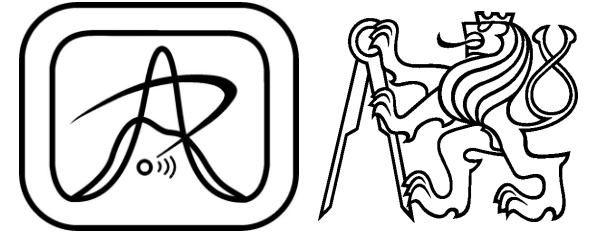
- Low and Medium Energy Polarimeters based on GridPix
- Different Gas mixtures and pressure for different energy range
- Micromegas with Timepix3 ASIC readout
 - 256 x 256 pixels
 - Time and energy measurement with 2 ns precision in each pixel
 - Dead-time free data taking



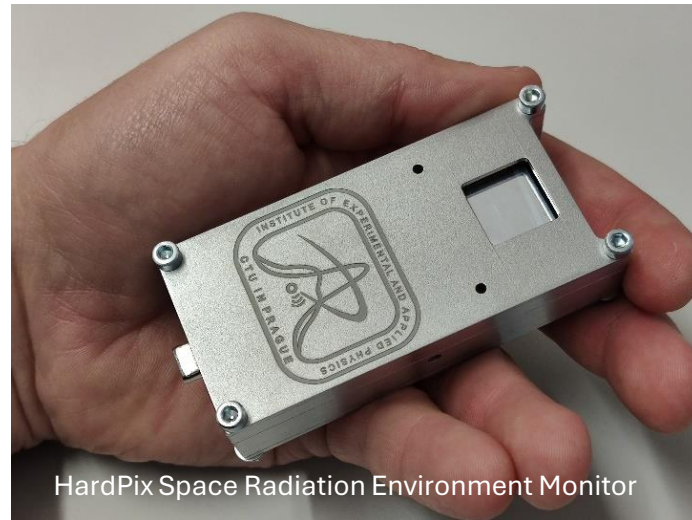
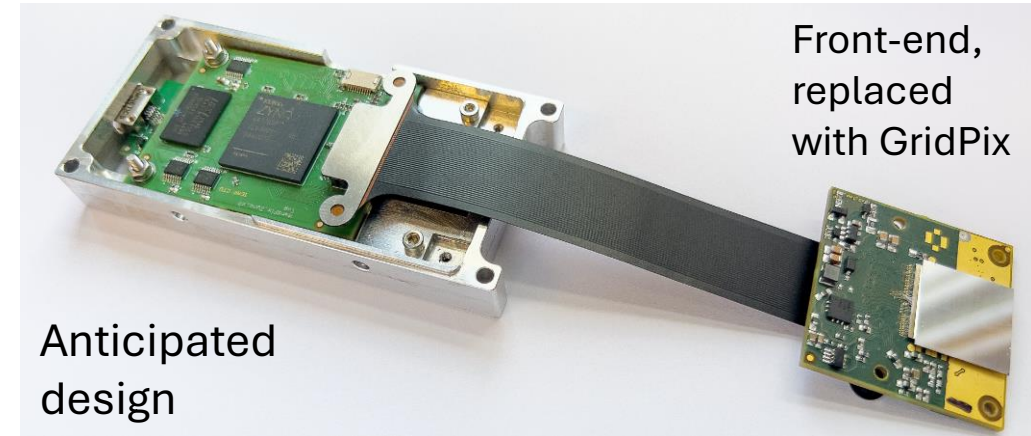
IEAP CTU contributes to helps with GridPix development and will prepare the readout electronics interfacing LEP and MEP with the spacecraft
Critical contribution to the overall mission



EXPO - Electronics development at IEAP CTU

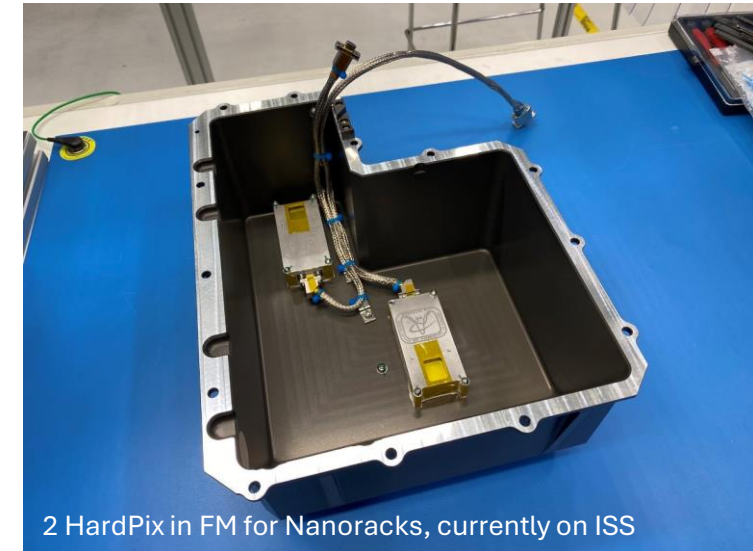


- Low and Medium Energy Polarimeters based on GridPix (Micromegas + Timepix3 ASIC)
- Timepix3
 - 256 x 256 pixels
 - Time and energy measurement with 2 ns precision in each pixel
 - Dead-time free data taking




Space Heritage

- SWIMMR1 D-Orbit ION satellite to LEO - since June 2023
- SWIMMR-2 (330 km to 1200 km) – Since Jan. 2025.
- Robinson Paihau Institute/Nanoracks experiment onboard ISS (HEKI Mission)



EXPO – Our way into space

Phase	Schedule (TBC)	Deliverables
A	2028 - 2029	Instruments Phase A: pre-development. Deliverables: Breadboard electronics at TRL6.
B1	2030 - 2032	<ul style="list-style-type: none">- Detailed design for Mission Adoption- 1x Engineering model (EM) – production and tests
B2	2033 - 2036	<ul style="list-style-type: none">- 1x Qualification model (QM) – production- 1x Structural and Thermal model (STM) – production
C	2036 – 2039	<ul style="list-style-type: none">- 1x Flight Model (FM) - production and acceptance tests- 1x Flight Spare Model (FS) – production and acceptance tests
D	2039-2041	Satellite integration
E	2041	Launch and inflight commissioning 

Currently: Phase 0 Step 2 proposal submitted

EXPO – Take away

- EXPO is an ambitious mission providing novel instrumentation to understand processes around the most-extreme environments of the universe
- The Czech participation to the mission is substantial both in the science and instrument-development part



RADECS 2026

28 SEPTEMBER - 2 OCTOBER 2026

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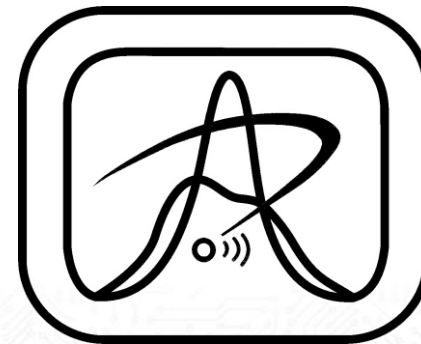
**RADIATION and its Effects on
Components and Systems Conference**

VISIT THE OFFICIAL CONFERENCE WEBPAGE: www.radecs2026.org

RADECS 2026 in Prague

Benedikt Bergmann on behalf of the organizing committee.

B. Bergmann, J. Mekki, L. Artola, C. Fröjdh, T. Farris, O. Betak, S. Peracchi, G. Santin, S. Bonaldo, P. Maillard, M. Tyburec, N. Schäffer, C. Plettner, A. Trägerova



What is RADECS?



RADECS 2026
28 SEPTEMBER - 2 OCTOBER 2026
PRAGUE, CZECH REPUBLIC

- RADECS = **R**adiation and Its **E**ffects on **C**omponents and **S**ystems
- Major international conference and discussion forum of the radiation effects community in Europe
 - 550 participants (30% US, 60% Europe. 10% rest of the world)
 - 70 companies exhibiting their products and services
- Second time in the “Eastern Europe” and the **first time in the Czech Republic** in its ~30-year history

- Its Key focus is the **safe use of electronics** in the space and aerospace radiation environments

Preliminary schedule



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	Sunday 27.9.2026	Monday 28.9.2026	Tuesday 29.9.2026	Wednesday 30.9.2026	Thursday 1.10.2026	Friday 2.10.2026				
8	Excursion	Regis. BK	Registration PCC	Opening ceremony	Technical sessions	Technical sessions				
9		Thematic workshop					Registration & booth setup at PCC	Technical sessions	Technical sessions	Technical sessions
10										
11	Registration at BK Visit of IEAP labs*	Registration & booth setup at PCC	Technical sessions	Women in Engineering	Technical sessions	Awards meeting				
12							Registration at BK Visit of IEAP labs*	Registration & booth setup at PCC	Technical sessions	Women in Engineering
13	Registration at BK Visit of IEAP labs*	Registration & booth setup at PCC	Technical sessions	Women in Engineering	Technical sessions	Awards meeting				
14							Registration at BK Visit of IEAP labs*	Registration & booth setup at PCC	Technical sessions	Women in Engineering
15	Registration at BK Visit of IEAP labs*	Registration & booth setup at PCC	Technical sessions	Women in Engineering	Technical sessions	Awards meeting				
16							Registration at BK Visit of IEAP labs*	Registration & booth setup at PCC	Technical sessions	Women in Engineering
17	Registration at BK Visit of IEAP labs*	Registration & booth setup at PCC	Technical sessions	Women in Engineering	Technical sessions	Awards meeting				
18							Registration at BK Visit of IEAP labs*	Registration & booth setup at PCC	Technical sessions	Women in Engineering
19	Registration at BK Visit of IEAP labs*	Registration & booth setup at PCC	Technical sessions	Women in Engineering	Technical sessions	Awards meeting				
20							Registration at BK Visit of IEAP labs*	Registration & booth setup at PCC	Technical sessions	Women in Engineering
21	Registration at BK Visit of IEAP labs*	Registration & booth setup at PCC	Technical sessions	Women in Engineering	Technical sessions	Awards meeting				
22							Registration at BK Visit of IEAP labs*	Registration & booth setup at PCC	Technical sessions	Women in Engineering
23	Registration at BK Visit of IEAP labs*	Registration & booth setup at PCC	Technical sessions	Women in Engineering	Technical sessions	Awards meeting				

Open Exhibit Wednesday



Will be optimized after paper acceptance

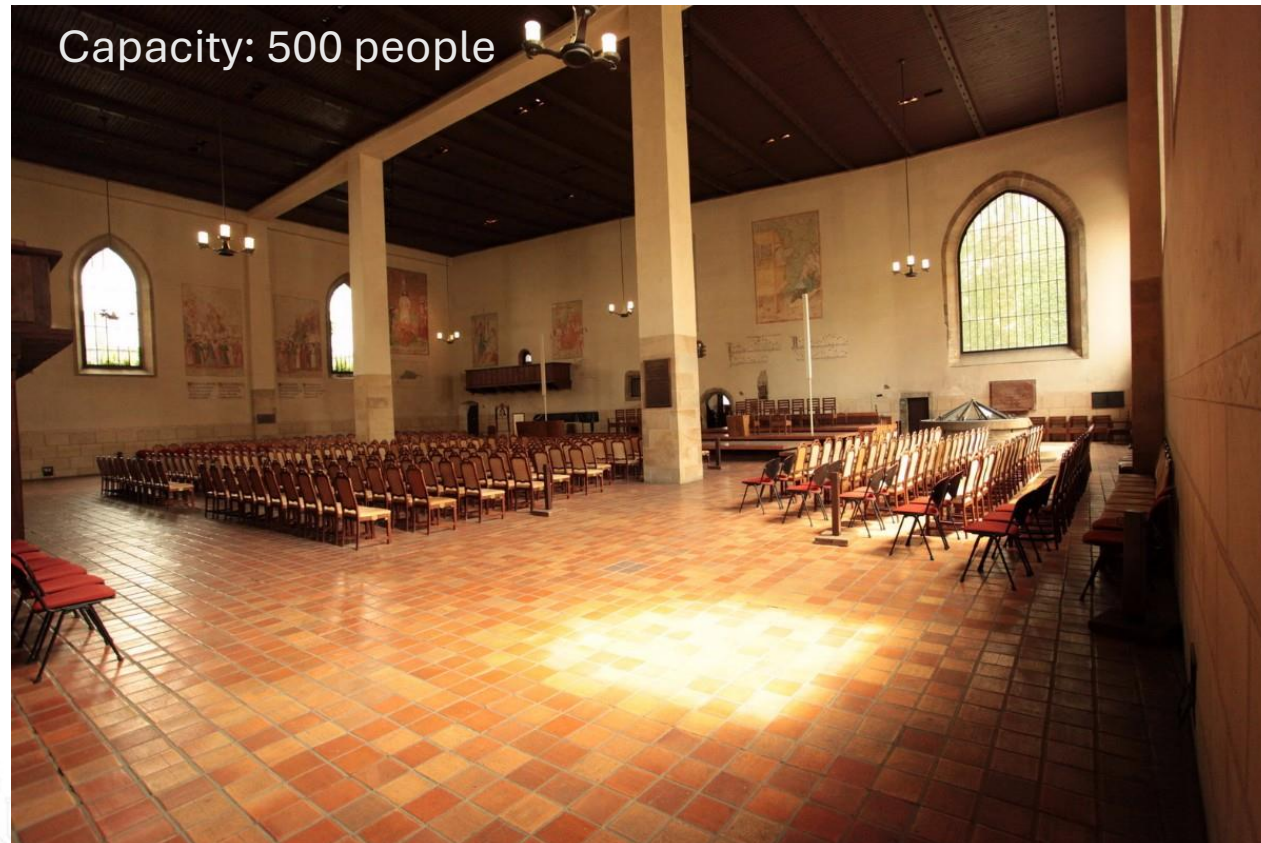
Thematic workshop



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“Measuring to Protect Future Missions: The Critical Role of Detection and Novel Dosimetry in Harsh Radiation Environments”

28 September 2026



Technical Sessions & Industrial Exhibit



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... at the Prague Congress Center



- Neofunctionalist building opened in 1981 as Palace of Culture
- Hosting NATO meeting Prague Summit in 2002
- Offers stunning view to Prague from the Exhibit

Exhibition Floorplan



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PRAGUE, CZECH REPUBLIC

3-day industrial exhibition.

Currently, **66 exhibitors** confirmed participation

There are **sponsorship and exhibits left**. Get involved !

EXHIBITION FLOORPLAN PRAGUE CONGRESS CENTER - 2 FLOOR

2 FLOOR



Welcome reception



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Strahov Brewery



Strahov Monastery – famous library



**28 Sep
2026**

7 – 10 pm

Warm buffet

Gala Dinner



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Slovansky Ostrov



Palace Zofin



- Neo-Renaissance building dating back to 1838
- Antonin Dvorak held his first concert there
- B. Smetana's "Ma Vlast" first performed in its entirety

- Welcome drinks and fingerfood
- 3-course dinner served at the tables
- Afterparty (until 1 am) with open bar

Accompanying program



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Excursion to Kutna Hora on Sunday, 27 September 2026 UNESCO world heritage site, famous bone church, silver mine, real-world location of „Kuttenberg“ from „Kingdom Come 2“

Soccer tournament Food & drinks at the soccer pitch – Slavoj Vysehrad (400 m from the conference venue)

Technical Visits on Friday afternoon

- ELI Beamlines up to 80 participants
- UJP Praha - confirmed up to 30 participants
- AdVisiones/AdvaSpace



Kutna Hora/Kuttenberg
UNESCO Heritage site

... visit the real-life location of **Kingdom Come II**





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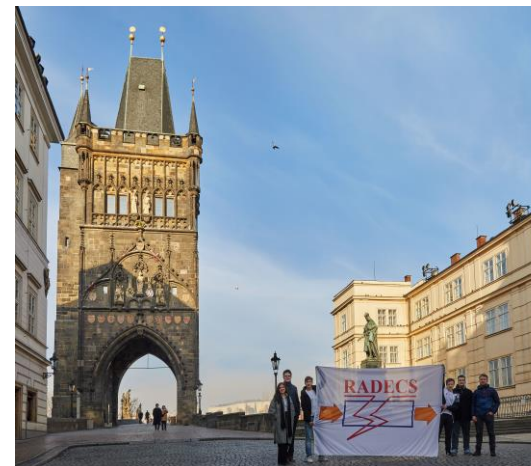
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<https://radecs2026.org/>

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**Thank you for your
attention!**



We have received 256 regular abstracts
(new RADECS record)

Late News will be open from 12 June – 4
July 2026

We look forward to your contributions!