

Competence Center in Monitoring and Control (CCMC)

V. Solovov

LIP Advisory committee meeting
28 April 2026



Objectives

- Help other LIP groups with tasks related to experiment control, electronics and data acquisition
 - Promote knowledge transfer, create new collaborations and participate in projects outside of strictly physics area
 - Promote outreach activities
 - Provide opportunities for advanced training for motivated students
 - Earn some money
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Team

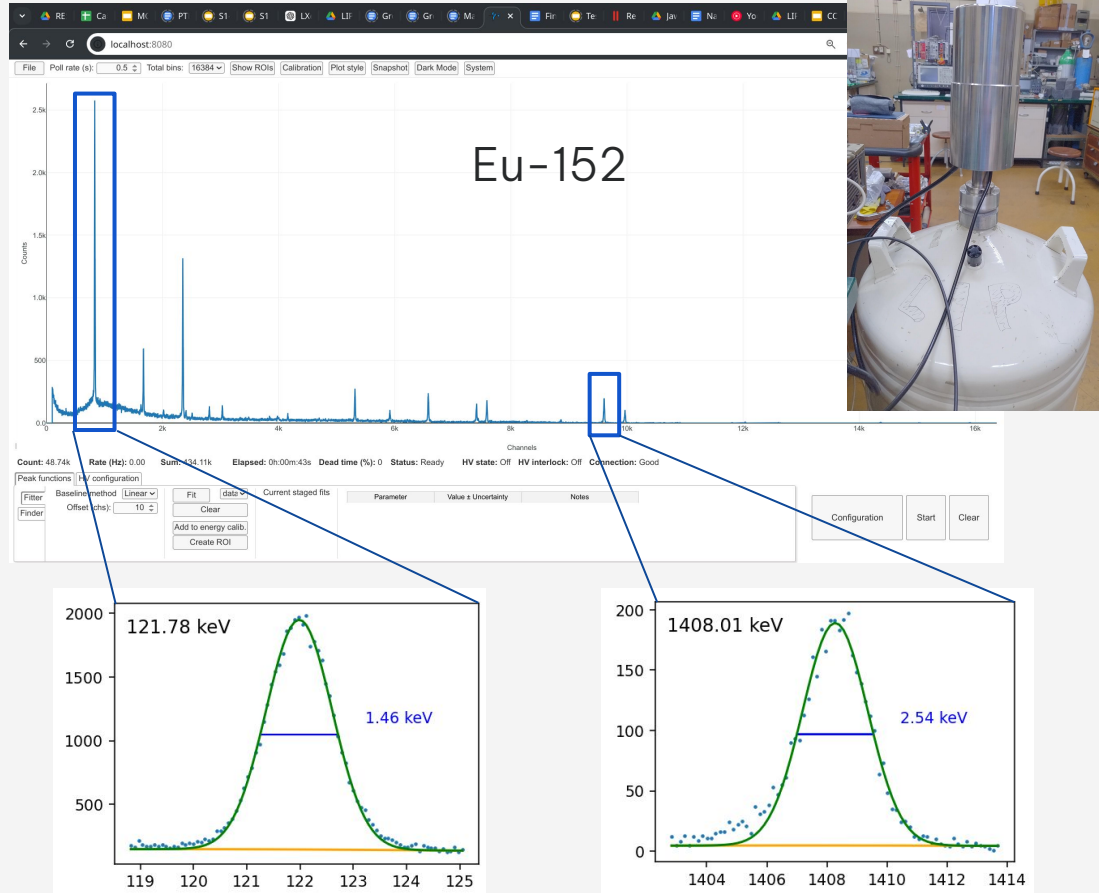
- Core team:
 - Vladimir Solovov, Francisco Neves, Nuno Barros
 - LIP contributors:
 - Guilherme Pereira, Siddique Baig, Paulo Fonte, João Silva, Helmut Wolters, Isabel Lopes
 - Engineering support:
 - Luis Lopes, Rui Alves, Nuno Carolino, Orlando Cunha
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Active projects

- Development of a MCA prototype for the VITAL Technology Group Co.
 - A cloud chamber for Ciencia Viva / Coimbra Exploratorio
 - Electronics for SiPM and RPC readout for neutron detectors group at LIP
 - Monitoring of invasive plant spread via analysis of satellite and drone images: an FCT-funded project in collaboration with UC and ESAC
 - Simulation and modeling of electromagnetic shark repellent devices in the frame of a UC-Business-coordinated project
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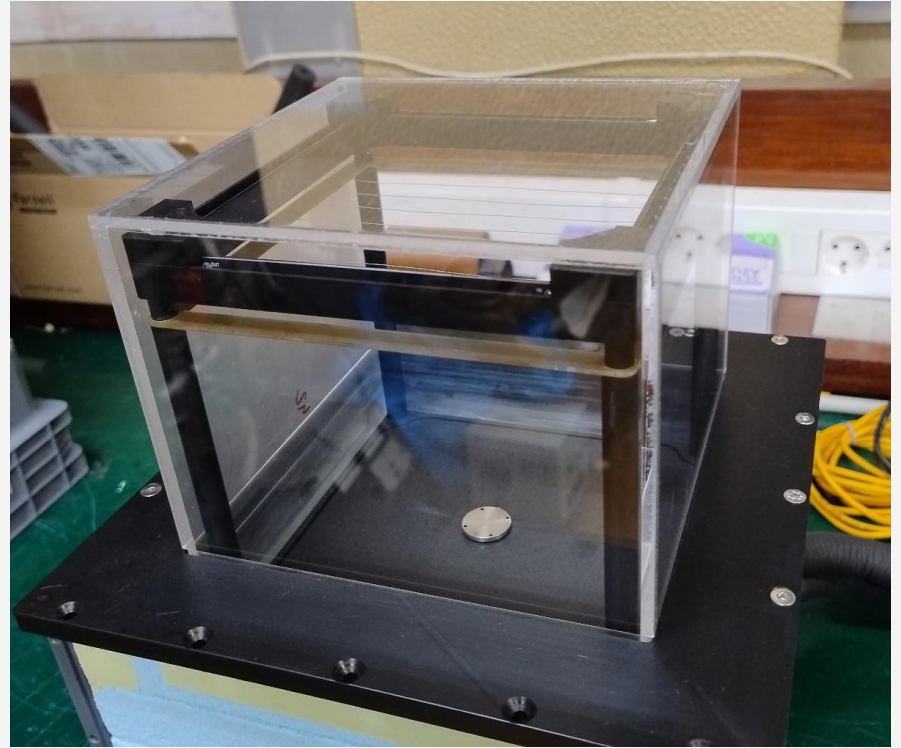
MCA

- Integrated solution:
 - Spectroscopy amplifier
 - MCA
 - HV supply
- High performance:
 - Linearity < 0.01% (100 ppm)
 - Rate up to 100 kHz
 - Energy resolution (FWHM):
 - 1.2% @ 122keV
 - 0.18% @ 1408 keV
- Currently running tests with a HPGe detector to evaluate real-world performance



Cloud chamber

- Upgrade of the previous design to allow a continuous operation
- Will be open to public as a part of LIP stand at Coimbra Exploratorio next week
- Negotiating a new design with a larger active area ($\sim 4x$ of the current one) with Ciencia Viva



SWAT

- Strengths:
 - Experience and strong problem-solving skills of the core team members
 - Strong support from the engineering team
 - Weaknesses:
 - No dedicated FTEs for core team
 - No dedicated funding
 - Opportunities
 - New collaborations (Bio-science, Ciencia Viva, UC-Business)
 - Participation in the projects with high societal impact
 - Important for LIP image
 - Attractive to students
 - Threats
 - Team volatility
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Thank you for your attention.

