



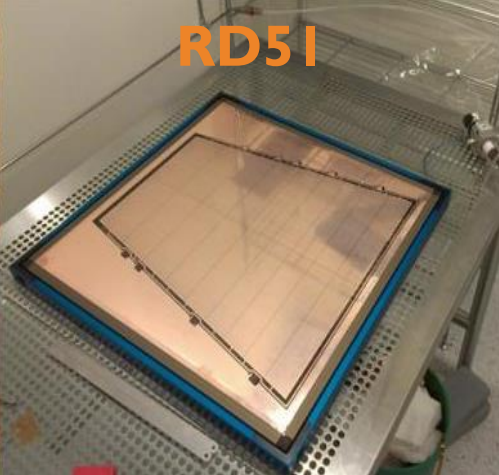
GASEOUS DETECTORS R&D SPACE INSTRUMENTATION

LIP COIMBRA | DEPARTMENT OF PHYSICS | 4th FLOOR | ROOMS G.17 & G.18

Filomena Santos, PhD
Filipa Borges, PhD
Rui Silva, PhD
José Escada, PhD
Jorge Maia, PhD

Alexandre Trindade, MSc
Afonso Marques, MSc

RD5I



NEXT



GASEOUS DETECTORS R&D

- Design and planning of gas detectors;
- Study of gas mixtures: optimize electron diffusion, stopping power, energy resolution – without compromising other interesting properties of the mixtures;
- Study of electron drift of electrons and ions in gases;
- Monte Carlo simulation to explain experimental results;
- Deeper understanding on the formation and properties of negative ions;

Current work:

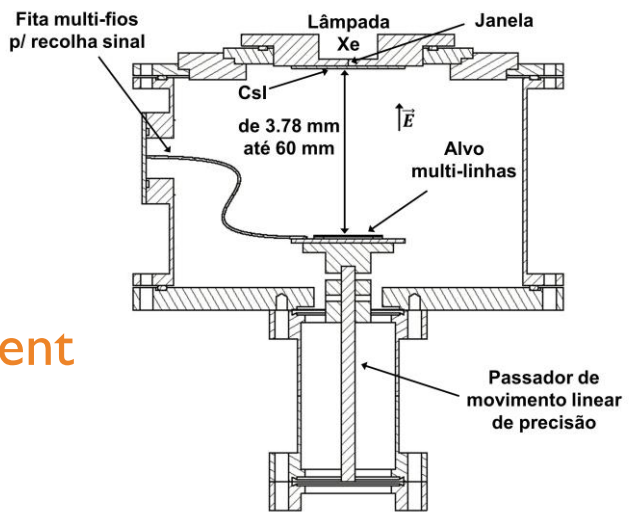
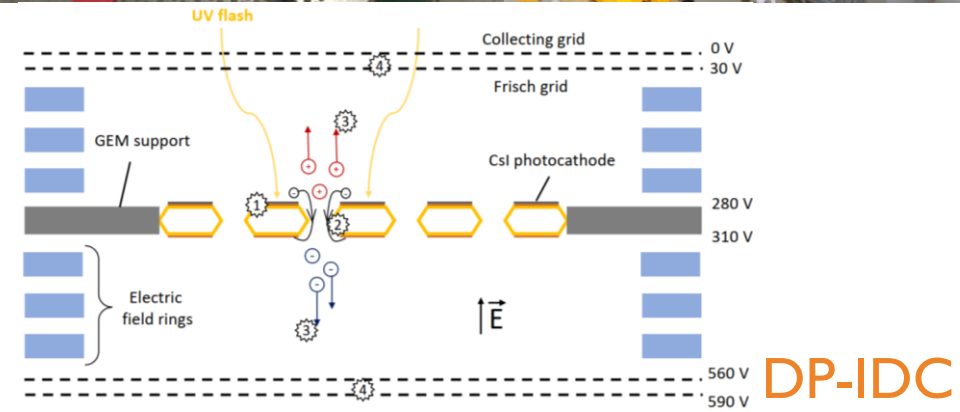
- Negative Ions as Charge Carriers in Gaseous Detectors;
- Complementary studies on negative ions;
- Dual Polarity Ion Drift Chamber (DP-IDC);
- Electron Diffusion Measurement Chamber;

International collaborations :

- NEXT (Neutrino Experiment with a Xe TPC);
- RD5I (CERN Collaboration);

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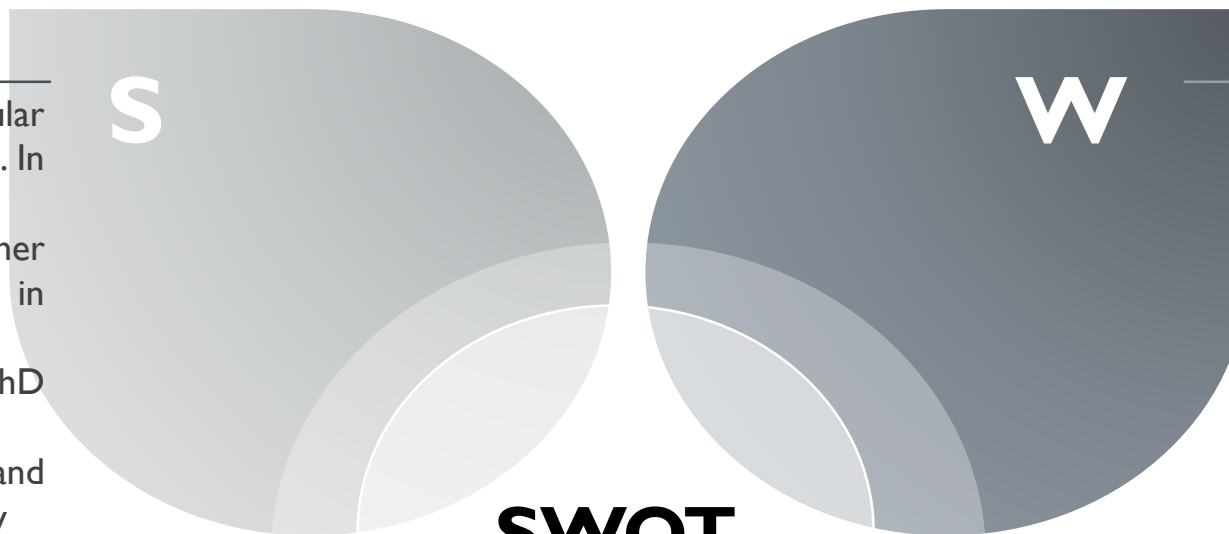
Electron
 Diffusion
 Measurement
 Chamber

STRENGTHS

- Students doing thesis, curricular internships and summer internships. In the past 3 to 4 years:
 - 12 students in summer internships and 4 students in curricular internships
 - 1 PhD student + 1 PhD concluded
- Theoretical, simulational and experimental experience/know-how
- Strong presence in the NEXT Collaboration
- Good involvement with young researchers

OPPORTUNITIES

- Successful student internships leading to MSc and PhD projects
- Negative ions as charge transport in noble gases may provide necessary knowledge on rare-event experiments
- New perspectives within Next Collaboration with negative ions



WEAKNESSES

- Lack of/very limited and non-stable internal and external funding leading to less projects, grant holders, laboratory material and, ultimately, results
- Reduced number of early career researchers

THREATS

- Irregularity in funding projects (FCT, mainly)
- Unability to stabilize the team due to financial problems