

Golem #16 - from #40420 to XZ

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- 1 Scientific projects - focus on diagnostics**

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Introduction

- Principal issues
 - Plasma edge studies
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 - hey

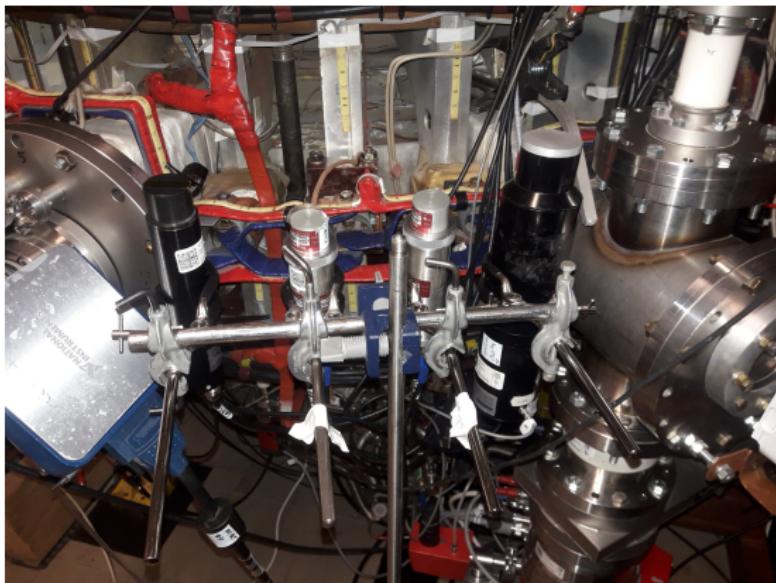
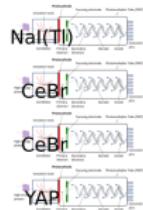
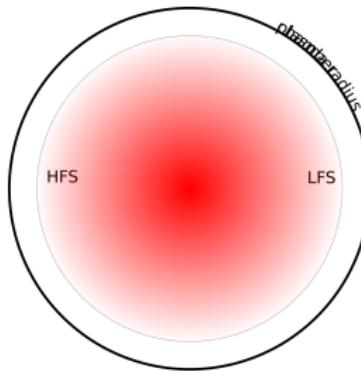
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- Diagnostic testing of Runaway electrons oriented research
 - HXR diagnostics with Scintillation Probes
 - HXR diagnostics with Strip detector
- Plasma edge studies

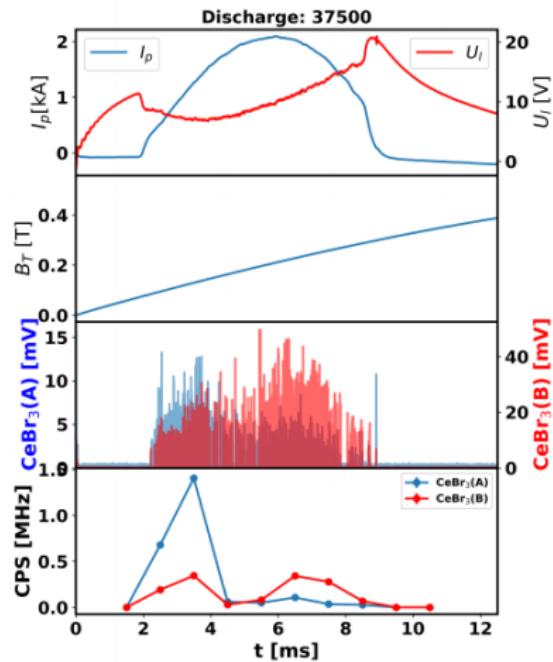
2 Educational activities

Scintillation probes at the tokamak GOLEM



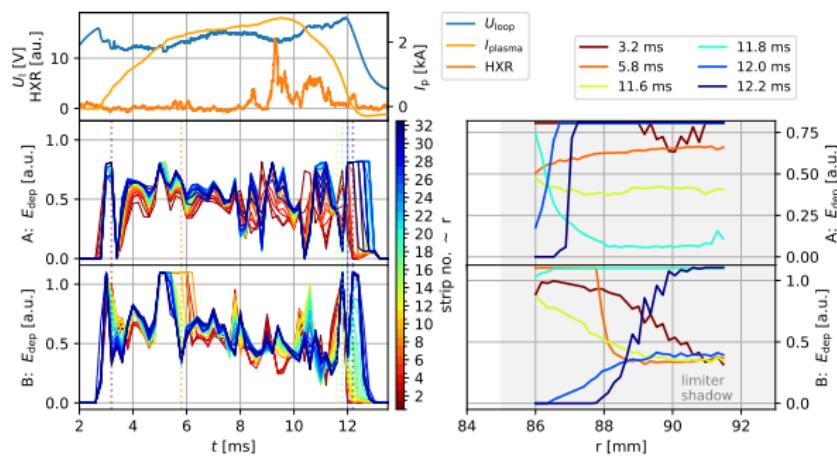
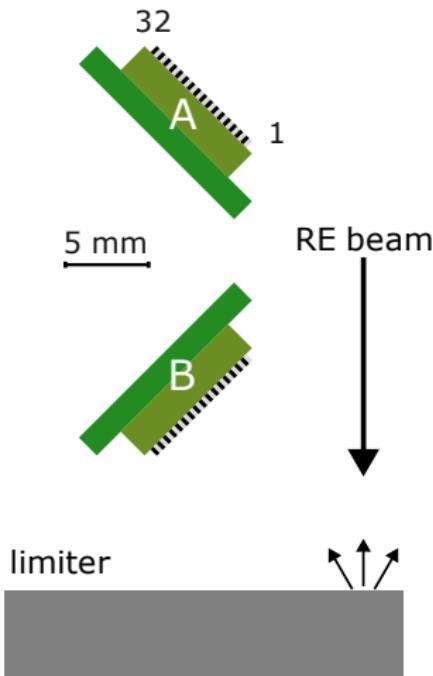
Focus on CeBr_3 scintillation crystals with fast decay time (18-25 ns) and superior energy resolution (4% FWHM at 662 keV), light yield ≈ 60 photons/keV and density $\approx 5.1 \text{ g/cm}^3$.

Bremsstrahlung radiation detected by CeBr₃ scintillation detector

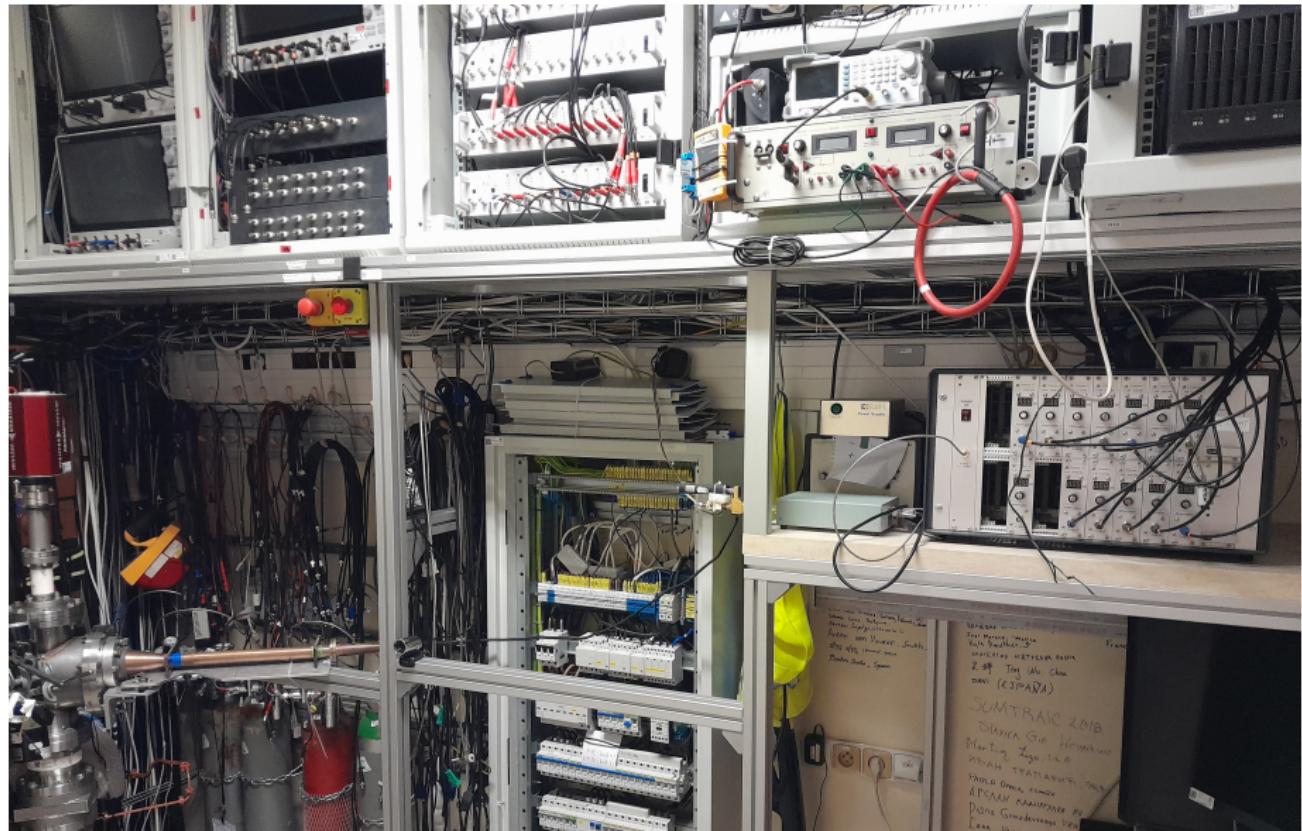


- Favorable conditions for runaway electron generation
 - high loop voltage ($E \approx 2 - 5$ V/m)
 - low density ($n_e \approx 10^{18}$ m⁻³)
- Density of plasma could be partially controlled by initial pressure of working gas

The distribution of REs in SOL



ECE Radiometer



0622 ECE radiometer - raw data

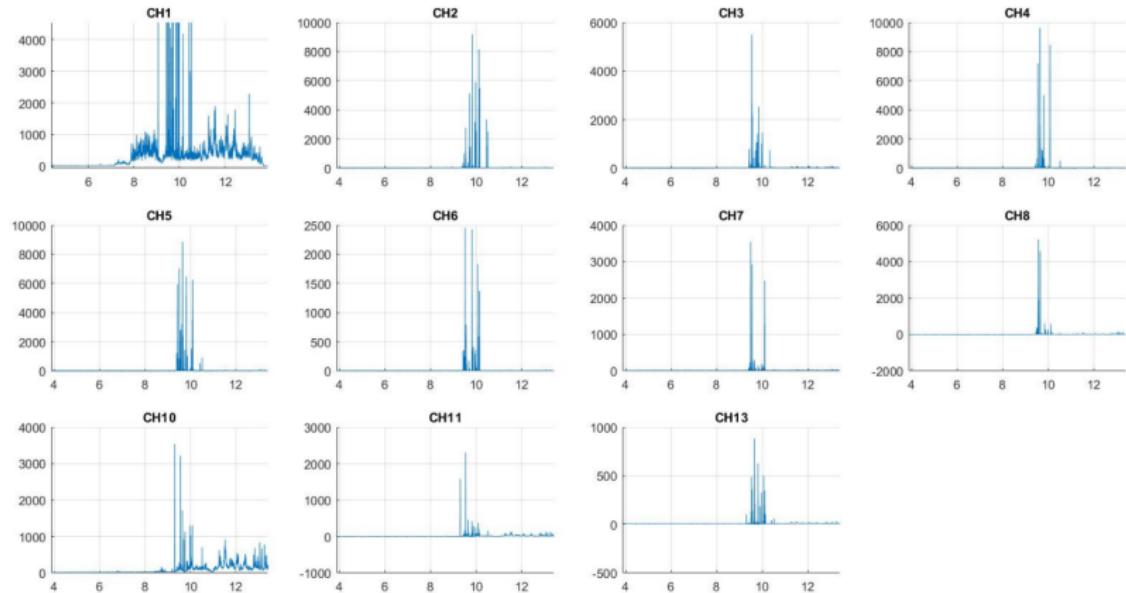


Figure: Radiometer measurements on time for clear chamber discharge (channel 1 is without attenuation and demonstrates the substrate in signal

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- Hands on tokamak experiment
- Remote trainings/demonstrations
- GOMTRAIC
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Stockel et al.

References I

- Stockel, J. et al. (Mar. 2019). "Operational Domain in Hydrogen Plasmas on the Golem Tokamak". In: *Journal of Fusion Energy*. ISSN: 1572-9591. DOI: 10.1007/s10894-019-00215-7.
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