



Laboratoire LEPRINCE-RINGUET  
Ecole polytechnique IN2P3/CNRS

# Séminaire

## Gamma-Ray Burst Polarimetry with POLAR

The polarisation of the prompt emission of Gamma-Ray Bursts is expected to hold a wealth of information on the nature of these transient high-energy events. Although in recent years several GRB polarisation measurements have been performed to date the number of these measurements as well as their precision has not been sufficient to exclude any of the existing GRB emission models. Using a dedicated detector the POLAR collaboration aims to produce a catalogue of GRB polarisation measurements with an unprecedented precision during the two year lifetime of the mission which was launched on September 15th 2016 as part of the Chinese space lab Tian Gong-2. The POLAR instrument is optimized for dedicated polarisation measurements of the 50-500 keV component of the prompt emission of GRBs and measures the polarisation parameters using the degree of non-uniformity of the Compton scattering angles for photons interacting in the detector. For this purpose it uses a finely segmented plastic scintillator array consisting of 1600 bars to measure the scattering angles of the incoming photons. Due to this fine segmentation POLAR can measure the photon interaction locations, and therefore the scattering angles, giving it a large sensitivity to polarisation. The instrument furthermore has a relatively large effective area and a field of view of 1/3 of the sky thereby optimising it for studying transient sources such as GRBs. The instrument commenced data taking on the 22nd of September 2016 after which calibration of the instrument started followed by scientific data taking. In the first months of operation POLAR has detected about 10 of GRBs per month, several of which are candidates for detailed polarization measurements. The in-orbit performance of the instrument will be presented along with an overview of the first scientific results and the future prospects of the POLAR mission.

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Salle conférence  
du LLR

**Lundi 15 Janvier**  
**14h00**

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Responsables séminaires

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