



Contribution ID: 775

Type: **Oral contribution**

## POLAR: Gamma-Ray Burst Polarimetry onboard the Chinese Spacelab

*Tuesday 4 August 2015 11:45 (15 minutes)*

Polarimetry is a powerful tool to study the emission processes involved in high energy astrophysical events such as Gamma-Ray Bursts (GRBs). Despite the wealth of information which can be extracted from polarimetry measurements few have been performed successfully thus far. POLAR is a novel space-borne Compton polarimeter foreseen to be launched in 2016 on the Chinese spacelab TG-2. The instrument is designed for dedicated measurements of the hard X-ray polarisation of the prompt emission of GRBs in the energy range 50–500 keV. The polarisation degree and angle of a photon flux can be extracted by measuring the Compton scattering angles when the photons interact in a detector. The Compton scattering angles of the incoming photons are measured in POLAR using a finely segmented plastic scintillator array consisting of 1600 bars. The bars have a surface area of 6 by 6 mm and a length of 176 mm and are read out in groups of 64 by 25 flat-panel multi-anode photomultipliers. Due to its large granularity POLAR can measure the photon interaction locations, and therefore the scattering angles, with a high precision resulting in a relatively high modulation factor. 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 GRBs. The instrument was shown through Geant4 simulations to be capable of performing measurements with a minimum detectable polarization below 10% for several GRBs per year. The flight model has recently been constructed and was tested extensively in recent months. The results from the instrument calibration measurements, performed using both radioactive sources and synchrotron facilities, and the results from the flight qualification tests will be presented along with the future prospects.

### Collaboration

– not specified –

### Registration number following "ICRC2015-I"

353

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**Session Classification:** Parallel GA15 Future / IN

**Track Classification:** GA-IN