



Contribution ID: 981

Type: **Oral contribution**

## The test results of the Silicon Tungsten Tracker of DAMPE

*Friday, 31 July 2015 14:45 (15 minutes)*

The DAMPE (DARK Matter Particle Explorer) is one of the five satellite missions in the framework of the Strategic Pioneer Research Program in Space Science of the Chinese Academy of Science (CAS).

DAMPE is a powerful space telescope for high energy gamma-rays, electrons and cosmic rays detection.

The detector consists of a double layer of plastic scintillator strips detector (PSD) that serves as anti-coincidence, followed by silicon-tungsten tracker-converter (STK).

The STK is followed by an imaging calorimeter of about 31 radiation lengths thickness, made up of 14 layers of BGO (Bismuth Germanium Oxide) bars. Finally, a layer of neutron detectors is added to the bottom of the calorimeter.

The total thickness of the BGO calorimeter and the STK correspond to about 33 radiation lengths, making it the deepest calorimeter ever used in space.

In this document we will present a detailed study of the performance of the EQM (Engineering Qualification Model) STK during a test beam performed at CERN in October - November 2014.

The STK is being developed by an international collaboration composed of groups from University of Geneva, INFN Perugia, INFN Bari, INFN Lecce and Institute of High Energy Physics, Beijing.

The STK is composed of a total of 7 tracker planes, forming 6 tracking layers. Three tungsten layers of 1 mm each, used for photon conversion, are integrated into the support trays of the second, third and fourth tracker planes.

The EQM STK is equipped with 26 ladders made of four single sided silicon strip detectors that are glued on 7 tracker planes, forming 6 tracking layers. The performances in term resolution and signal to noise ratio for different beam configurations will be described.

Moreover, the performances of the 192 ladders used for the construction of the Flight Model STK will be also presented.

### Collaboration

- not specified -

### Registration number following "ICRC2015-I"

823

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**Session Classification:** Parallel DM 02

**Track Classification:** DM-IN