

RD13 - 11th International Conference on Large Scale Applications and Radiation Hardness of Semiconductor Detectors



Contribution ID: 22

Type: **not specified**

The Silicon Tracker of the DAMPE satellite mission

Friday, July 5, 2013 11:45 AM (25 minutes)

DAMPE (DARk Matter Particle Explore) is a satellite mission of the Chinese Academy of Science dedicated to high energy particle detections in space. The main scientific objective of DAMPE is to detect electrons and photons in the range of 5 GeV-10 TeV with excellent energy resolution. It will also measure the flux of nuclei up to 100 TeV with excellent energy resolution.

The DAMPE detector consists of a plastic scintillator strips detector (PSD) that serves as anti-coincidence detector, a silicon-tungsten tracker-converter (STK), a BGO imaging calorimeter of about 31 radiation lengths, and a neutron detector.

The STK is made of 6 tracking double layers, each consists of two layers of single-sided silicon strip detectors measuring the two orthogonal views perpendicular to the pointing direction of the apparatus. Three layers of Tungsten plates with thickness of 1mm, 2mm and 2mm are inserted in front of tracking layer 2, 3 and 4 for photon conversion. The sensors that will be used is 9.5 cm by 9.5 cm in size, 320 μ m thick, and segmented into 768 AC coupled strips with a 121 μ m pitch. Only every other strip will be readout with expected position resolution better than 80 μ m. The front end readout electronics is an high range analog amplifier that will allow to measure the charge of the incident nuclei.

In this contribution, performance and design of the STK, as well as the status of the project will be described in detail.

Primary author: AMBROSI, Giovanni (PG)

Presenter: AMBROSI, Giovanni (PG)