

SciNeGHE 2016 High-energy gamma-ray experiments at the dawn of gravitational wave astronomy



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DAMPE: a Gamma and Cosmic Ray Observatory in Space

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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 Sciences (CAS). Launched on December 17th 2015 at 08:12 Beijing time, it is taking data into a sun-synchronous orbit, at the altitude of 500 km. The main scientific objective of DAMPE is to detect electrons and photons in the range of 5 GeV-10 TeV with unprecedented energy resolution, in order to identify possible Dark Matter signatures. It will also measure the flux of nuclei up to 100 TeV with excellent energy resolution.

The satellite is equipped with a powerful space telescope for high energy gamma-ray, electron and cosmic rays detection. It consists of a plastic scintillator strips detector (PSD) that serves as anti-coincidence detector, a silicon-tungsten tracker (STK), a BGO imaging calorimeter of about 31 radiation lengths, and a neutron detector. With its excellent photon detection capability and its detector performances (at 100 GeV energy resolution $\sim 1\%$, angular resolution $\sim 0.1^\circ$), the DAMPE mission is well placed to make strong contributions to high energy gamma-ray observations: it covers the gap between space and ground observation; it will allow to detect a line signature in the gamma-ray spectrum, if present, in the sub-TeV to TeV region; it will allow a high precision gamma-ray astronomy.

A report on the mission goals and status will be presented, together with in-orbit first data coming from space.

Primary author: D'URSO, Domenico (ROMA2)

Presenter: D'URSO, Domenico (ROMA2)

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