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Study on Temperature effect in DAMPE BGO ECAL

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The DARK Matter Particle Explorer (DAMPE) is an orbital experiment which aims at searching dark matter by measuring the spectra of gamma, electron and positron originating from space. The BGO electromagnetic calorimeter (ECAL) is one of the core sub-detectors of DAMPE for energy measurement from 5 GeV to 10 TeV. The Calorimeter consists of 308 BGO crystal bars with the dimension of 2.5cm×2.5cm×60cm each. The light output of BGO crystal depends not only on the energy deposited by particles but also on the temperature. We have studied the temperature dependence of the BGO calorimeter response to cosmic rays in the thermal vacuum chamber. A temperature correction method is also reported in this paper.

Collaboration

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