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The EUSO@TurLab project'

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JEM-EUSO is a space mission devoted to the investigation of Ultra-High Energy Cosmic Rays and Neutrinos ($E > 5 \times 10^{19}$ eV), using the atmosphere as a giant detector, which is also the source of the largest fraction of noise (nightsky background). The EUSO@TurLab project is an on-going activity aiming to reproduce atmospheric and luminous conditions that JEM-EUSO will encounter on its orbits around the Earth, once it will be installed to the International Space Station. The TurLab facility, part of the Department of Physics - University of Torino, is equipped with a rotating tank, used to perform fluid-dynamics studies. In EUSO@TurLab project the facility is used to simulate different surface conditions (with different optical characteristics, like snow, oceans, forests, glaciers, deserts, savanna) in a very dark and rotating environment in order to test the response of JEM-EUSO's sensors and its sensitivity. Moreover, it is possible to produce "replica" of other kind of glowing phenomena such as cosmic rays, meteors, city lights, lightnings, etc. by using artificially controlled luminous intensities. The detector is a simplified system consisting of a 25 pixel Multianode Photomultiplier, a lens and a read-out electronics using conventional modules. The experimental setup currently in operation has been used to check the potential of the TurLab facility for the above purposes, and the acquired data are used to test the concept of JEM-EUSO's trigger system. In this presentation we will report on the description of the EUSO@TurLab project, examples of the luminous conditions produced so far, as well as the results of the tests of the JEM-EUSO first level trigger applied to the data taken at TurLab.

Collaboration

JEM-EUSO

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