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The first miniTRASGO Cosmic Ray telescope

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Since their discovery in 1912, cosmic rays have been an invaluable source of information about the distant universe, constituting one of the pillars of the so-called multi-messenger astronomy. Also, they act as a penetrating radiation providing information about near-Earth space and the solar activity. In order to deepen our knowledge in cosmic rays, a new family of detectors called Trasgos has been proposed. These high granularity tracking devices employ Resistive Plate Chambers (RPCs) to detect ionizing secondary cosmic rays in a plug&play philosophy. The 0.1 m² small size Trasgo here presented includes pressure, temperature and humidity sensors as well as built-in rate monitoring software and hit maps. The detector performance and calibration procedures are outlined, along with results from measurements and preliminary analyses. This study not only proves the scientific potential of the miniTRASGO concept, including the observation of a Forbush Decrease, but also sets the stage for its future integration into a international muon telescope network, which aims to enhance global cosmic ray research.

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