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URAGAN & TRAGALDABAS: two complementary approaches for the regular survey of cosmic rays

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Cosmic Rays research is of great interest both because it improves our knowledge of how Cosmic Rays are produced and accelerated and because it provides a great deal of information about the interstellar and interplanetary media, the solar activity and the Earth's surroundings.

In order to deepen our understanding of several phenomena related with the cosmic rays, two complementary facilities have been developed in Europe based on the local measurement of cosmic ray bundles with unusual performances. On the one hand the large area tracking hodoscope URAGAN, located at the MEPHI of Moscow (55.7° N, 37.7° E, 173 m a.s.l.), is targeted to detect in a real-time mode the muon flux at the Earth's surface in a wide range of zenith angles (0-80°) with a high angular resolution ($\sim 1^\circ$). The main objective of URAGAN is study variations of the angular distribution of the muon flux caused by different atmospheric and extra-atmospheric processes.

On the other hand, TRAGALDABAS is a small area ($\sim 1.8\text{m}^2$) tracking detector, located at the Univ. of Santiago de Compostela (42.9° N, 8.6° W, 240 m a.s.l.), offering as its main strengths outstanding resolutions on both position ($\sim 100\text{cm}^2$) and time ($\sim 300\text{ps}$) and good angular resolution ($< 2.5^\circ$). These features will allow it to explore the front structure of the cosmic ray showers and to make some guess about the energy and the arrival direction of primary cosmic rays.

The distance between both facilities is $\sim 3557\text{km}$, allowing to scan a significative area of the celestial sphere looking for common and simultaneous effects in the arrival of cosmic rays. In this poster, we summarize the main aspects of our initiative for a joint analysis of the data taken by both facilities, the combined performances and the main research topics we want to undertake.

Collaboration

- not specified -

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