

Multi-messenger probe of Cosmic Ray Origins: the MICRO project

We present the milestones achieved by the MICRO (Multi-messenger probe of Cosmic Ray Origins) project. This multi-institute project consists of a study of bursting astrophysical sources as candidate sources for Ultra-High-Energy Cosmic Rays (UHECRs). We aim at identifying source classes that correlate best with existing observational data (direction, energy distribution, and primary mass) and to constrain the origin of UHECRs on the basis of the largest datasets acquired to this day. The study of the secondary fluxes of neutrinos and gamma rays will provide a powerful test of the most suitable astrophysical scenarios.

For these achievements, a public software enabling a joint fit of both composition and flux data as a function of energy and direction is being developed. In addition, a modelling of transient sources is foreseen, including the treatment of hadronic interactions within the sources, which represents a novelty for UHECR simulation codes.

This contribution will highlight the first results of the project and detail upcoming software releases, which will benefit the astroparticle community at large.

Primary author: CONDORELLI, Antonio (IJCLAB/CNRS)

Presenter: CONDORELLI, Antonio (IJCLAB/CNRS)