

Mapping Highly-Energetic Messengers throughout the Universe

S. Buson, University of Würzburg

Cosmic rays prove that our Universe hosts elusive astrophysical "monsters" capable of continuously and efficiently accelerate particles at extreme energies. High-energy photons and neutrinos may provide the ultimate key to decipher the mystery of cosmic rays. In 2017, the candidate detection of neutrino emission from the direction of the gamma-ray flaring blazar TXS 0506+056 has put forward gamma-ray blazars as promising neutrino point-sources, hence cosmic-ray accelerators. However, to date there is neither a consistent picture for the physical mechanism nor a theoretical framework capable of convincingly explain the full set of multi-messenger observations. I will present initial encouraging steps in this multimessenger (electromagnetic and neutrino) quest and finally discuss the latest status of the field.