Contribution ID: **98** Type: **Oral**

Cosmological electromagnetic cascades as probe of the Universe

Friday 11 August 2017 14:00 (15 minutes)

Very high energy gamma-rays produced by extragalactic sources are absorbed in the intergalactic medium. High energy photons interact with low energy photons from the extragalactic background light (UV to IR) producing pairs of electron - positrons. Newly created leptons scatter CMB photons to gamma-ray energies. Spectral properties, halo extension and time delay due to the cascade strongly depend on the source and intergalactic medium properties. In particular, the development of such a cascade is crucial to probe the extragalactic magnetic field (EGMF) which cannot be probed by other means. We have developed a new Monte Carlo code to simulate the cascade physics. After a short presentation of the code, I will review how the search for cascade signatures can be used to derive constrains on the extragalactic medium. To conclude I will discuss the cascade contribution to the extragalactic gamma-rays background derived from recent Fermi data.

Primary authors: Mr FITOUSSI, Thomas (IRAP (Toulouse - France)); Dr BELMONT, Renaud (IRAP (Toulouse - France)); Dr MALZAC, Julien (IRAP (Toulouse - France)); MARCOWITH, Alexandre (LUPM Université Montpellier); COHEN-TANUGI, Johann (Université de Montpellier, CNRS/IN2P3); Prof. JEAN, Pierre (IRAP (Toulouse - France))

Presenter: Mr FITOUSSI, Thomas (IRAP (Toulouse - France))

Session Classification: Extragalactic sources

Track Classification: Extragalactic sources (incl. transients)