



Contribution ID: 239

Type: Talk

Very fast TeV gamma-ray variability from the non-aligned AGN IC 310: Insight into Black Hole Lightnings

Sunday, 6 December 2015 14:42 (21 minutes)

Rapid flux variabilities with time scales of minutes are regularly detected in the very high energy (VHE) gamma-ray emission of blazars during violent flaring periods. Those are generally explained by the classical shock-in-jet acceleration models, assuming a very large Doppler factor, which condenses the intrinsic multi-hours-scale variations into a few minutes for the observer on Earth. This assumption, which requires a large jet Lorentz factor (>10) and very small angle between the jet and the observer (<5 deg), is conceivable for blazars. However, recent observation of rapid variabilities in the VHE gamma-ray flux from the peculiar radio galaxy IC 310 by MAGIC is very challenging for the shock-in-jet model. Indeed the jet viewing angle is estimated to lie between 10 and 20 deg, and the Doppler boost cannot play a dramatic role. The flux doubling-time measured in November 2012 is faster than 5 min and constrains the size of the emission region to be smaller than 20% of the gravitational radius of the central black hole. Here, we will present in detail the MAGIC observations and discuss possible alternative models, such as pulsar-like particle acceleration in the magnetosphere anchored to the plasma surrounding a spinning black hole.

Primary authors: GLAWION, Dorit; SITAREK, Julian (University of Łódź); Prof. MANNHEIM, Karl (Uni Wuerzburg); COLIN, Pierre (MPI fuer Physik)

Co-authors: ROS, Eduardo (Instituto de Fisica Corpuscular (ES)); KRAUSS, Felicia (Uni Wuerzburg); WILMS, Joern (Uni Erlangen-Nuerberg); KADLER, Matthias (Uni Würzburg); SCHULZ, Robert (Uni Wuerzburg)

Presenter: COLIN, Pierre (MPI fuer Physik)

Session Classification: 19 - VHE & CR