

Consistent Analysis of Long-term VHE Blazar Observations as a Key to Acceleration Mechanisms

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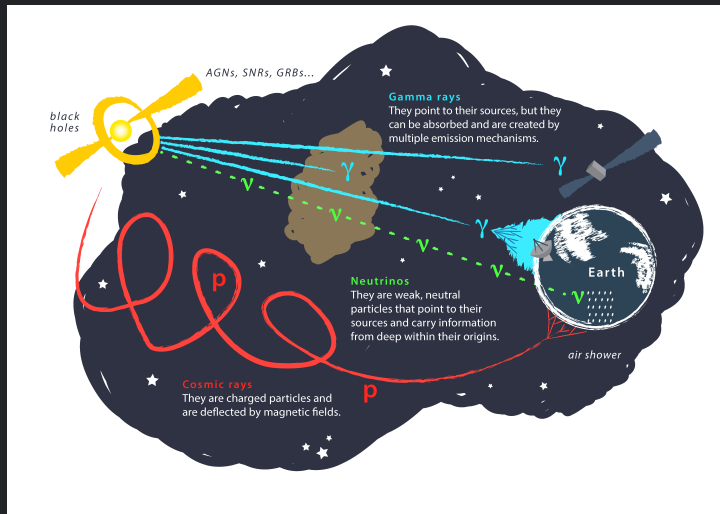
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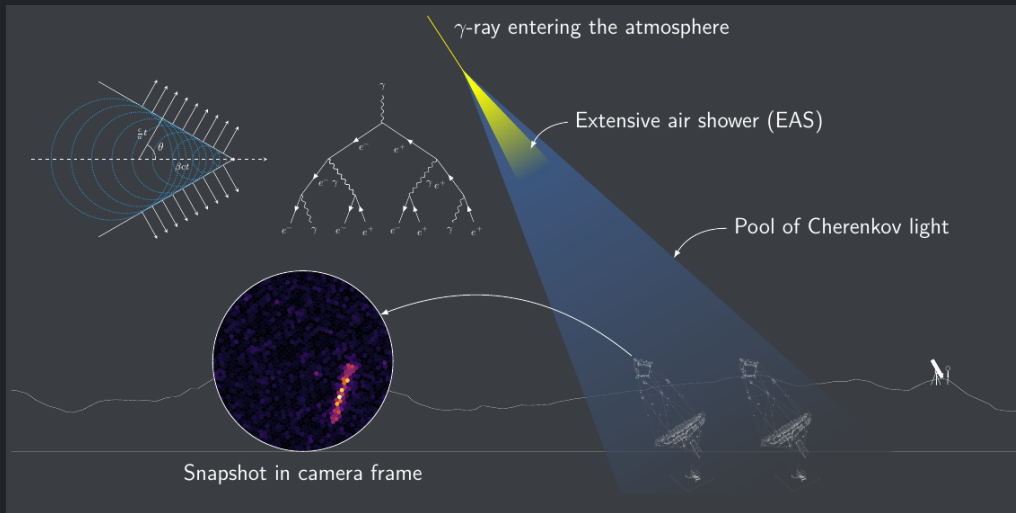
What is a Blazar?



Multimessenger Astronomy



Cherenkov Astronomy



The MAGIC Telescopes



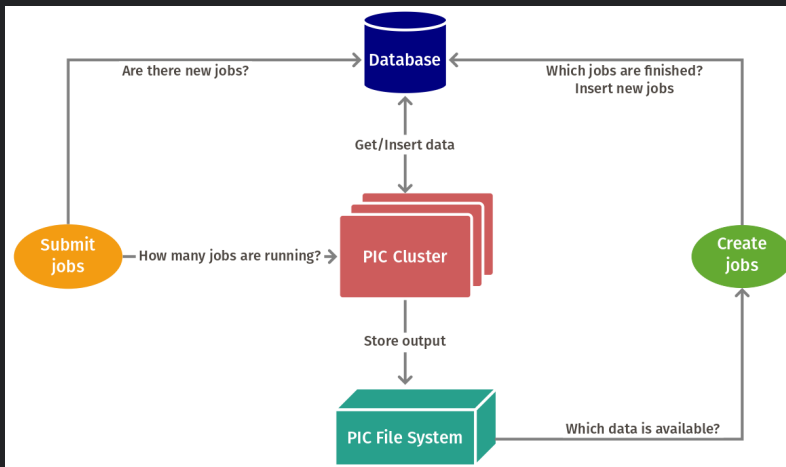
Credits: MAGIC Collaboration

- Imaging Atmospheric Cherenkov Telescopes
- Operated on the Roque de los Muchachos, La Palma, Spain
- Consisting of two telescopes operating in stereo mode
- Sensitive in the range of 25 GeV to 30 TeV
- Approximately 800 GB of raw data per night

Long-term Analysis

- Why?
 - Acceleration mechanisms of cosmic radiation in Active Galactic Nuclei are still unknown
 - Temporal variability could help us understand processes in the Jets
 - Timescale of possible temporal variability is unknown
- What can we do?
 - MAGIC Telescopes are taking stereo data since 2011
 - Different blazars have been observed continuously throughout this period
 - Analyzing large amounts of data can be highly challenging

autoMAGIC



Credits: Jan Lukas Schubert

Outlook and Prospects

- Goal: Understanding the acceleration mechanisms in Active Galactic Nuclei
- In: Data of the MAGIC Telescopes of more than one decade
- How: Using the database-driven automation software autoMAGIC
- Why: Enables us to analyze large amounts of Active Galactic Nuclei to receive statistical significance
- To: Receive insights whether these acceleration processes can also accelerate hadrons to energies of up to 10^{16} eV and above

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