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On the Matter Content of Astrophysical Jets

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High-energy space missions allow keeping watch over blazars, which are jet emitting astrophysical sources that can flare. They provide deep insights into the engine powered by supermassive black holes. However, having a blazar caught in a very bright flaring state is not easy requiring long surveys. The observation of such flaring events represents a goldmine for theoretical studies.

Such a flaring event was captured by the INTEGRAL mission in June 2015 while performing its today's deepest extragalactic survey when it caught the prominent blazar 3C 279 in its brightest flare ever recorded at gamma-ray energies. The flare was simultaneously recorded by the Fermi-LAT mission, by the Swift mission, by the INTEGRAL mission and by observations ranging from UV, through optical to the near-IR bands. The derived snapshot of this broad spectral energy distribution of the flare has been modeled in the context of a one-zone radiation transfer leptonic and lepto-hadronic models constraining the matter content. I will discuss results and challenges faced by trying to reconcile these observations and theory. I will also show very recent results from TeV observations by Atmospheric Cherenkov Telescopes of the flare of 3C 279 and how they relate to our predictions.

Experimental Collaboration

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