

On the cause of the extraordinary flare of CTA 102

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In late 2016 and early 2017, the flat spectrum radio quasar CTA 102 ($z=1.032$) experienced an extraordinary phase of its existence. Starting in October 2016, over the course of two months the gamma-ray flux rose by a factor 50 and decreased again for 2 months to pre-flare levels. This long-term trend has been superposed by short, bright flares, which made CTA 102 one of the brightest gamma-ray sources in the sky despite its large cosmological distance. Simultaneously to the gamma-ray trend, the optical flux has increased by a factor 100, while the X-rays varied by a factor of 10 compared to pre-event observations. We explain the event by the ablation of a passing gas cloud by the jet. This model fits amazingly well the long-term trend and can also account for the short-term outbursts on top of that.

Primary author: Dr ZACHARIAS, Michael (TPIV, Ruhr-Universität, Bochum, Germany)

Co-authors: Ms WIERZCHOLSKA, Alicja (Jagiellonian University); Mr JANKOWSKY, Felix (Landessternwarte Heidelberg); Dr LENAIN, Jean-Philippe (LPNHE); Prof. BOETTCHER, Markus (North-West University); Prof. WAGNER, Stefan (LSW Heidelberg)

Presenter: Dr ZACHARIAS, Michael (TPIV, Ruhr-Universität, Bochum, Germany)

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