Contribution ID: **990** Type: **Talk**

Hints for variable gamma-ray emission from the Galactic SNR RCW86

Friday 18 July 2025 14:35 (15 minutes)

Supernova remnants are known to accelerate particles to relativistic energies on account of their non-thermal emission. Fast variability in the non-thermal synchrotron emission has been detected in multiple remnants and was linked to local properties of the magnetic fields. Further, variations in the long-term radio and x-ray flux have been reported for various objects as well.
RCW86 is one of the objects with variability of the non-thermal X-ray emission from a small localized region. It is a young Galactic SNR interacting asymmetrically with the outer shell of a wind-blown bubble created by a progenitor's or companion's wind. Analysis of the multi-wavelength observation of RCW86 from radio to gamma-ray energies lead to the conclusion that its gamma-ray emission is likely of leptonic origin.
Here, we report indications for a variability of the gamma-ray emission of RCW86 in the high-energy domain. We analyzed 16years of LAT-data at energies above 10GeV and find a flux-variation in one part of the remnant with a probability of ≤1% of obtaining such a result by chance. We found no evidence for unexpected or systematic variability of the gamma-ray emission of other sources in the field of view.

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Session Classification: GA

Track Classification: Gamma-Ray Astrophysics