Contribution ID: **307** Type: **Poster**

# Using LHAASO to Search for Ultra-High Energy Gamma-Ray Radiation Enhancement During Crab Nebula Flaring State

*Wednesday 27 August 2025 18:00 (2 hours)*

The Crab Nebula is an important object of study in gamma-ray astronomy. Since the full array operation of LHAASO-KM2A in July 2021, it has conducted long-term and efficient observations of the Crab Nebula in the very high energy (VHE) range, in the tens of TeV region. We have obtained light curves, energy spectra, and ultra-high-energy photon data from the direction of the Crab Nebula since the full array operation of KM2A. The Crab Nebula exhibits flaring phenomena in the hundreds of MeV to GeV range, first detected by the AGILE satellite of the Italian Space Agency, and later detected multiple times by NASA's Fermi-LAT. Previous observations of these flares by VERITAS and HESS Cherenkov telescopes were made in coordination with Fermi, but no significant flux variation was found in their energy ranges. In our analysis of the long-term light curves from Fermi since the full array operation of KM2A, we detected two flares, in December 2022 and December 2023. During these corresponding time periods, we studied the light curves and energy spectra from KM2A and found no significant flux variations, only providing upper limits on the flux variation.

## Collaboration you are representing

**Authors:** XI, Shaoqiang (IHEP); ZHANG, junyang (中国科学院高能物理研究所); CHEN, songzhan (Institute of High Energy Physics(IHEP),CAS)

**Presenter:** ZHANG, junyang (中国科学院高能物理研究所)

**Session Classification:** Poster session

**Track Classification:** High-Energy Astrophysics and Cosmic Rays