Z218b PeVatron candidates seen by CTAO LST-1

Yating Chai, Takayuki Saito, Marcel Strzys (ICRR, The University of Tokyo), Fabio Acero (Centre de Physique des Particules de Marseille) , Alessandra Briscioli, Mathieu de Bony, Marie-Sophie Carrasco, Franca Cassol, Heide Costantini (Centre de Physique des Particules de Marseille), Gabriel Emery (Instituto de Astrofisica de Andalucia), Jakub Jurysek, Roland Walter (University of Geneva), Giorgio Pirola (Max Planck Institute for Physics) on behalf of the CTAO-LST Project

The Large-Sized Telescope 1 (LST-1) of the Cherenkov Telescope Array Observatory, with its excellent angular and energy resolution, provides key constraints on Galactic PeVatrons and allows detailed studies of their spatial and spectral morphology. We report LST-1 observations of PeVatron candidates, including LHAASO J2108+5157, and SNR G106.3+2.7. For LHAASO J2108+5157, 49 hours of data reveal a 3.7 sigma excess above 3 TeV and a 2.2 sigma hint of hard emission ($\Gamma = 1.6 \pm 0.2$) over 0.3–100 TeV. Although the origin of the high-energy γ-ray emission remains uncertain, the spectrum is compatible with protons escaping a shock around a middle-aged SNR. For G106.3+2.7, 42.6 hours of large-zenith-angle observations yield a 5 sigma detection, revealing energy-dependent morphology with emission extending beyond 50 TeV. These results highlight LST-1's capability to provide crucial constraints on the origin the knee and the nature of Galactic PeVatrons.