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Unraveling the mystery of Galactic PeVatrons: VERITAS and multi-wavelength study of the unidentified LHAASO sources

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The detection of 14 ultra-high-energy (UHE, photon energy above 100 TeV) gamma-ray sources by LHAASO has opened up new avenues for investigating Galactic PeVatrons. We present the status of a VERITAS study of three intriguing LHAASO sources: J2108+5157, J0341+5158, and J0621+3755. J2108+5157 and J0341+5158 are “dark PeVatrons” without any source association. J0621+3755 is a TeV halo candidate associated with PSR J0622+3749, possibly the third detection of this new source class. VERITAS has an angular resolution of 0.1 deg and sensitivity to an energy range complementary to LHAASO. Therefore VERITAS provides a unique opportunity to study the emission sites of the VHE counterpart of the LHAASO sources and allows us to place constraints on the particle acceleration mechanism. In this study, we will give an update on the VERITAS and available multi-wavelength observations of the three unidentified LHAASO sources.

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