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Young pulsars powering ultra-high energy sources

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The recent discovery of a new population of ultra-high-energy gamma-ray sources with spectra extending beyond 100 TeV revealed the presence of Galactic PeVatrons - cosmic-ray factories accelerating particles to PeV energies. These sources, except for the one associated with the Crab Nebula, are not yet identified. With an extension of 1 degree or more, most of them contain several potential counterparts, including Supernova Remnants, young stellar clusters and Pulsar Wind Nebulae (PWNe), which can perform as PeVatrons and thus power the surrounding diffuse ultra-high energy gamma-ray structures. In the case of PWNe, gamma rays are produced by electrons, accelerated at the pulsar wind termination shock, through the inverse Compton scattering of 2.7 K CMB radiation. In this presentation, I will discuss the implications of the theoretical maximum gamma-ray energy that the central pulsars nearby LHAASO sources and will compare it with the highest energy photons reported by them from a dozen of ultra-high-energy sources.

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