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## Galactic gamma-ray PeVatron observations and non-thermal processes in galactic sources (remote)

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Cosmic rays are ultrarelativistic particles that permeate the Milky Way, propagating through the Galactic turbulent magnetic fields. The mechanisms under which these particles increase their energy can be reasonably described by current theories of acceleration and propagation of cosmic rays. There are, however, still many open questions as to how to reach petaelectronvolt (PeV) energies, the maximum energy believed to be attained in our Galaxy, and in which astrophysical sources (dubbed PeVatrons) this ultra-high energy acceleration happens. In this contribution, I will present the theoretical conditions for plasma acceleration to these energies, and the Galactic sources in which these conditions are possible. These theoretical predictions are then confronted with the latest experimental results, summarising the state-of-the-art of our current knowledge of PeVatrons. I finally describe future prospects to keep advancing the understanding of these elusive objects, still unidentified more than one hundred years after the discovery of cosmic rays.

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