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LHAASO Highlights in gamma-ray Astronomy

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The Large High Altitude Air Shower Observatory (LHAASO) as the largest ground based Gamma Ray detector array is built up. The full array has been operated for months. Many VHE gamma ray sources has been observed including well known sources such as the Crab and Mkr421. With many sources found having strong emission of gamma rays in UHE(> 0.1 PeV) band, LHAASO starts the era of the UHE gamma ray astronomy. With its unprecedented sensitivity at energies above 10 TeV and extremely high background rejection capability, super-PeV gamma-like events, including the record high energy of 1.4 PeV, are detected first time in history. With also measured SEDs of several galactic gamma sources above 0.1 PeV, LHAASO reveals that our galaxy is full of PeVatrons. The extreme features of the electron PeVatron inside the Crab pose strong challenges to models and even more fundamental theories. Those discoveries enable an exploring for hadronic PeVatrons, i.e. origins of cosmic rays. The highest energy photons provide opportunities of checking for validity of fundamental rules, such as the Lorentz Invariance.

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