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Assessing TeV Visibility of Pulsars

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Recent detections of the Crab, Vela, Geminga pulsar as well as PSR B1706-44 by ground-based Cherenkov telescopes have created exciting prospects of many more such discoveries by the upcoming Cherenkov Telescope Array. Pulsed photons with energies in excess of 1 TeV detected from the Crab and Vela pulsars severely constrain the particle energetics, emission mechanisms, as well as spatial aspects of the dissipation regions within the pulsar magnetosphere. Within an extended slot-gap framework, we model the broad-band pulsar spectrum invoking force-free-like fields and multiple emission components, including synchro-curvature, synchrotron self-Compton (SSC) and inverse Compton (IC) radiation by both primary particles and pairs. IOn particular, we predict two TeV components: (i) SSC from pairs and (ii) IC from particles accelerated in the current sheet upscattering pair synchrotron radiation. We fit our predictions to available broadband data, indicating that it may now be possible to directly measure the maximum particle energy in pulsars.

Apply to be considered for a student ; award (Yes / No)?

No

Level for award;(Hons, MSc, PhD, N/A)?

N/A

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