



Contribution ID: 6

Type: **not specified**

Pulsed TeV emission from pulsars in the synchrocurvature/inverse-Compton framework

Wednesday, 27 November 2024 14:00 (20 minutes)

A number of pulsars have now been detected by ground-based Cherenkov telescopes, including PSR B1706-44, Geminga, Crab, and Vela. Vela exhibits a TeV component that is distinct from its GeV one, in contrast to the other detected pulsars. In the synchro-curvature radiation / inverse Compton (SCR-IC) framework, the same particles that are responsible for the GeV emission via SCR (with Lorentz factors of around $5e7$) near the current sheet (CS) beyond the light cylinder radius, upscatter optical-near-infrared to X-ray photons to form a pulsed TeV component via inverse Compton (IC) scattering. The target photons may be synchrotron radiation (SR) from secondary pairs. I will review the assumptions of this model as well as its reasonably successful reproduction of available spectral and light curve data of some pulsars. I will also touch on recent work to develop and calibrate a visibility metric for TeV pulsars that may be used to focus future Cherenkov observations of plausible pulsar candidates.

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Session Classification: Theoretical models: Pulsar emission mechanisms