

# Modeling Very-High-Energy Emission from Pulsars

*Saturday, 17 April 2021 16:00 (15 minutes)*

Ground-based Air-Cherenkov telescopes have detected pulsations at energies above 50 GeV from a growing number of Fermi pulsars. These include the Crab, Vela, PSR B1706-44 and Geminga, with the first two having pulsed detections above 1 TeV. There appears to be VHE emission that is an extension of the Fermi spectra to high energies as well as additional higher-energy components that require a separate emission mechanism. We will present results of broad-band spectral modeling using global magnetosphere fields and multiple emission mechanisms that include synchro-curvature, synchrotron self-Compton (SSC) and inverse Compton (IC) radiation from both accelerated particles and power-energy pairs. Our models predict two VHE components: SSC from pairs that can extend to several TeV and IC from particles accelerated in the current sheet that appears beyond 10 TeV. Model spectra show a wide range of VHE emission, with detectable SSC and IC components expected for Crab-like pulsars and some millisecond pulsars but only an IC component for Vela. We argue that the IC component above 10 TeV from Vela has been seen by H.E.S.S. Detection of this emission component from the Crab and other pulsars is possible with HAWC and CTA and directly measures the maximum particle energy in pulsars.

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**Session Classification:** Exploring the Galaxy: Models and Maps

**Track Classification:** Pulsar