

APR10-2009-000110

Abstract for an Invited Paper
for the APR10 Meeting of
the American Physical Society

Implications of Fermi Observations for Gamma-Ray Pulsar Emission Models

MATTHEW BARING, Rice University

Pulsars are powerful sources of radiation across the electromagnetic spectrum. This review will highlight some recent theoretical insights into non-thermal, magnetospheric pulsar gamma-ray radiation. These advances have been driven by the huge data infusion provided by NASA's Fermi mission, launched in mid-2008. The LAT instrument on Fermi has afforded the discrimination between polar cap and slot gap/outer gap acceleration zones in young and middle-aged pulsars. Altitude discernment using the highest energy pulsar photons will be addressed, as will inferences of the primary radiation mechanism in the LAT band using phase-resolved spectroscopy, connecting to both polar cap/slot gap and outer gap scenarios. Focuses on curvature radiation and pair creation will be included, as will population trends that may afford probes of the magnetospheric accelerating potential. While the Vela pulsar serves as a principal test case, the geometrical and emission model interpretation of Fermi LAT results for several other young pulsars will also be discussed. An additional brief focus will be the implications of Fermi observations for millisecond pulsars.