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The Third Fermi LAT Pulsar Catalog, 3PC

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The Third Fermi Pulsar Catalog (3PC) is nearing completion and will provide timing solutions, pulse profiles, spectra, and ancillary data for over 250 gamma-ray detected pulsars. This grand undertaking pursues the steady growth established by 1PC (46 pulsars) and 2PC (117 pulsars). Ever-more-sophisticated search techniques turn up very gamma-faint radio pulsars and a surprising number of radio-eclipsing binary millisecond gamma-ray pulsars. The edges of the parameter space occupied by gamma-ray pulsars continue to expand – for example, with the discovery of PSR J2208+4056, the lowest spindown power known for a non-recycled gamma-ray pulsar is now Edot=8e32 erg/s. This pulsar also stands out for being more linearly polarized than most radio pulsars in that Edot range, allowing speculation that gamma and polarized radio emission may come from related electron populations. Because radio emission in young pulsars is thought to identify the polar cap, the radio-loud population is particularly useful in constraining gamma-ray pulsar emission models. Indeed, the capability of finite-resistivity MHD models to produce the observed trends in 2PC data provided the first strong evidence for emission from the current sheet, beyond the light cylinder. We will present analogous results from 3PC for a much larger sample, as well as general properties of the population and further highlights from the analysis.

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