PULSAR POPULATIONS AND UNIDENTIFIED EGRET SOURCES

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The EGRET telescope on the Compton Gamma-Ray Observatory detected seven gamma-ray pulsars but 170 other sources it detected are still unidentified. At least three subpopulations of EGRET sources have been associated with the galaxy: bright sources lying along the galactic plane, weaker sources spatially correlated with the Gould Belt and a high-latitude, possibly variable halo population. Many of these sources may be pulsars and there are about a dozen radio pulsars in or near EGRET source error boxes, most of them recently discovered in the Parkes Multibeam Survey. I will present results from several numerical simulations of pulsars in the galaxy, which predict the number of pulsars detected by gamma-ray and radio surveys assuming different models for the high-energy emission beam and its relation to the radio beam. Future gamma-ray pulsar detections by AGILE and GLAST together with the recent large rise in the radio pulsar population will give greatly improved statistics. The relative numbers of radio and gamma-ray pulsars detected in the plane and in the Gould Belt populations will provide an important discriminator between models of high-energy emission and will profoundly affect the numbers and birth rate of pulsars in the galaxy.