Abstract

PSRs J0218+4232, B1821−24 and B1937+21 are among the most energetic and fastest-spinning millisecond pulsars (MSPs). They have been studied in all radio, X-ray and gamma-ray bands. The *Fermi* LAT Pass 8 data was published in 2015 and has lots of advantages over the old Pass 7 data, such as increased effective area and wider energy range. Since the recent gamma-ray spectral analysis of the three MSPs are relatively old, I redo the gamma-ray spectral analysis of the MSPs with four-year more *Fermi* LAT observational data and newly published Pass 8 data. I obtain better fit results for gamma-ray spectra of the three MSPs with smaller errors and larger test statistic values. I also do numerical simulations to test the two-layer model using the new observational data. By minimizing the differences between the predictions of the two-layer model and the real data, I fit the independent parameters of the two-layer model. I find that the simplified two-layer model can predict broadband spectra of the three MSPs which are very close to the observational data from *Fermi* LAT in most energy ranges.

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