

An automated and interactive tool for gamma-ray pulsar monitoring and glitch detection

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The *Fermi* Large Area Telescope is enabling a revolution in pulsar physics, having detected more than 270 gamma-ray pulsars. Many *Fermi* pulsars show glitches in one or more timing parameters, and one of them, the radio-quiet PSR J2021+4026, is variable on a time scale of a few years. Hence, a monitoring infrastructure is required in order to systematically study the timing evolution of gamma-ray pulsars. For this purpose we are developing the Automated Pulsar Periodicity Looker, an analysis pipeline for *Fermi* pulsars, based on Python and on the official Fermi tools. This pipeline periodically runs data reduction and periodicity tests for each gamma-ray pulsar in the catalog, then performs a glitch search with different approaches. The computational time is reduced thanks to an optimized usage of memory, which renders the tool suitable for a systematic timing analysis of *Fermi* pulsars. Moreover, a web application allows users to visualize the results and to interactively manage analysis setups. Here we present a preview of the infrastructure, and we discuss future applications in the multi-messenger framework, focusing on searches for gravitational waves from pulsars.

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