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Multi-wavelength variability of the gamma-ray binary LS I +61 303 along the super-orbital period

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Detected from radio to TeV gamma rays, the gamma-ray binary LS I + 61°303 is highly variable across all frequencies. Beside its variability due to the modulation of its emission due to the 26.496-day orbital period, the system also presents variability consistent with the so-called superorbital period, of 1667 days. We will present the latest data set of LSI +61° 303 taken with the Fermi Large Area Telescope and put it in a multi-wavelength context. Furthermore, we show for the first time that not only at GeV energies but also in other bands, the superorbital modulation is more prominently seen at orbital phases around apastron, whereas it does not introduce a visible change close to periastron. Finally, we present correlation studies between GeV, X-ray, optical, and radio data and comment on a physical, pulsar-based scenario which could explain the behavior of this enigmatic binary.

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