

The gamma-ray Moon seen by the Fermi LAT over a full solar cycle

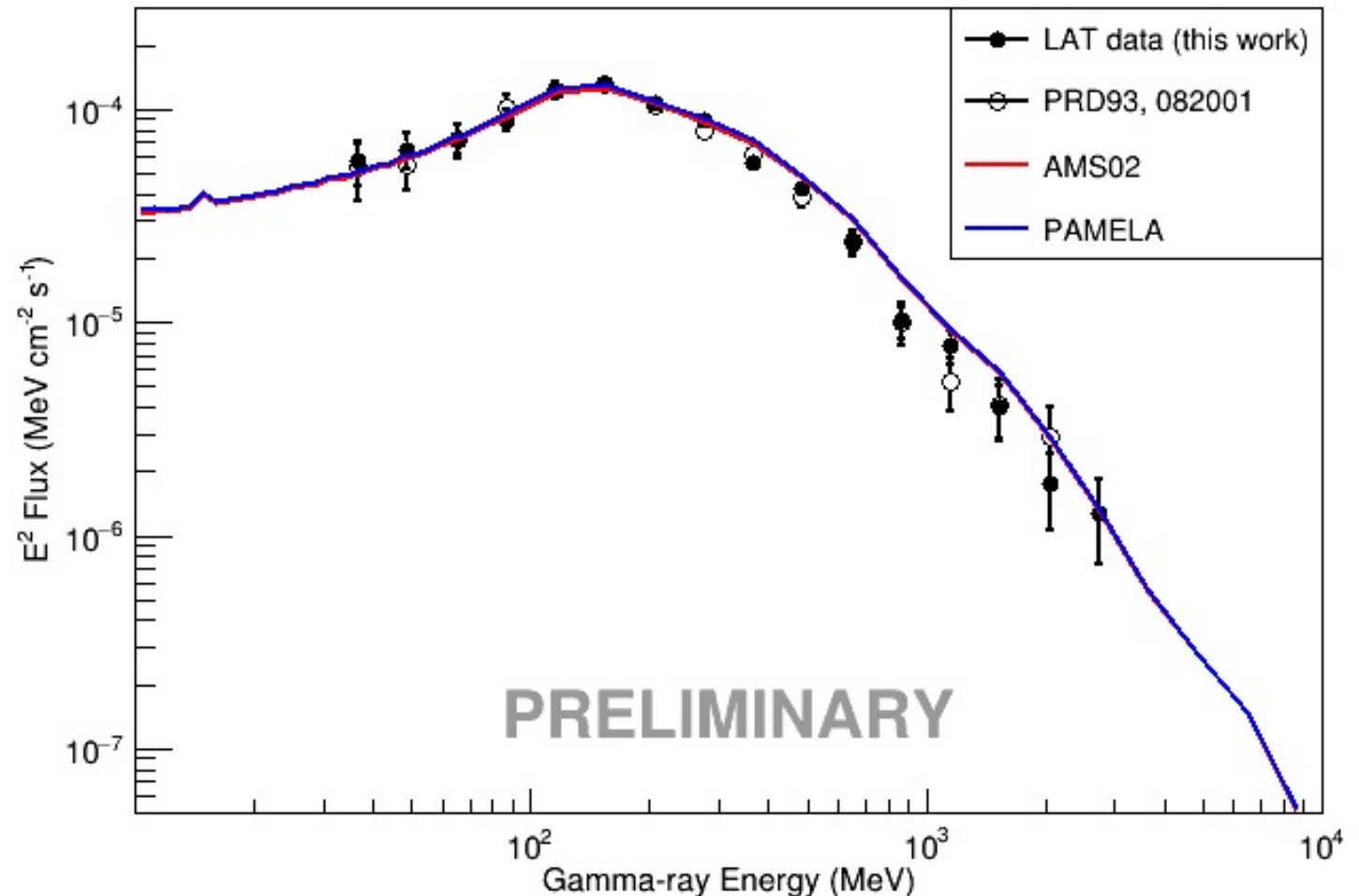
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Moon γ -ray flux: measurements and expectation

- The Moon is a source of high-energy γ -rays due to interactions with CRs
- This work: analysis of Fermi LAT data (August 2008 – December 2020) to reconstruct γ -ray Moon energy spectrum
- The analysis follows the procedure in PRD93, 082001 (7 years)
 - this work: Moon position calculated by using spacecraft coordinates
- Expected flux: folding γ yield (FLUKA) with AMS02 and PAMELA p and He spectra
 - in agreement with data



Moon γ -ray flux: time evolution over a full solar cycle

- Dataset divided into 6-month-duration samples
- Found anticorrelation between flux and sunspot number (WDC-SILSO)
- The anticorrelation with solar activity was expected
 - CRs flux is modulated by Sun magnetic fields
- Flux reaches a maximum at the end of 2019
 - beginning of 25th Solar Cycle

