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SFB1491

Approaches on Long-term Lightcurves of Blazars for Theoretical Modeling Comparison

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2025-11-04

TU Dortmund University | SFB 1491

Acknowledgement of Country

I would like to acknowledge the Traditional Owners of the land on which we are meeting.

I pay my respects to their Elders, past and present, and the Aboriginal Elders of other communities.

MAGIC Telescopes

Credit: MPP

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- MAGIC telescopes take data since 2009 in stereo observations
- Together with the VERITAS and HESS telescopes they serve as sister experiment

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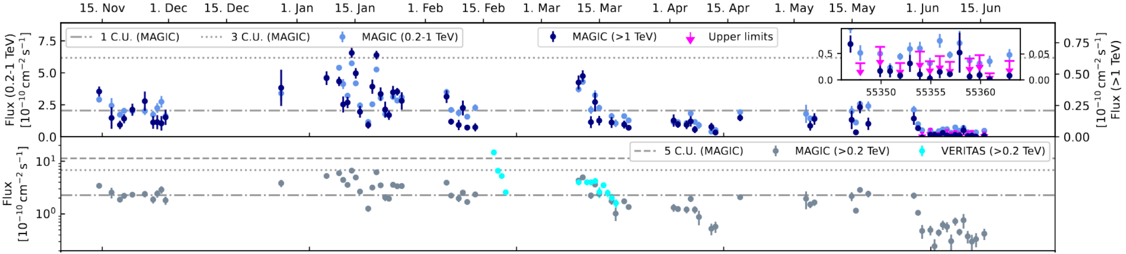

Credit: 10.1051/0004-6361/202451624

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- Long-term analyses with IACTs are time-consuming due to a high number of substeps
- Such analyses are prone to human error because of the high number of substeps
- Detailed documentation is required to ensure reproducibility of studies

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- Reproducibility through consistent configuration files requiring minimal saving capacities
  → FAIR Values

Database-driven software - autoMAGIC:

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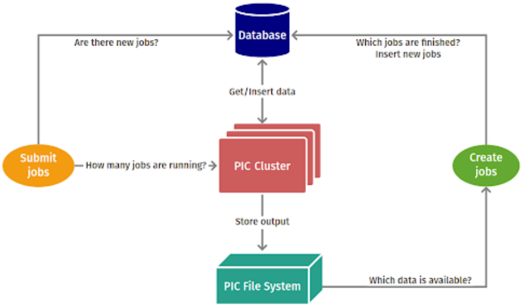

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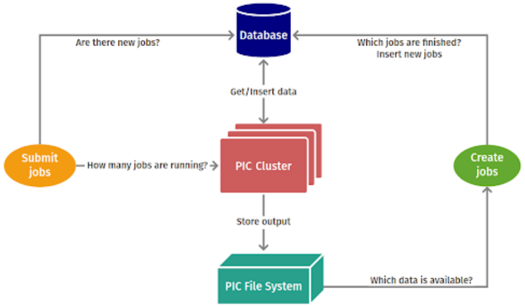

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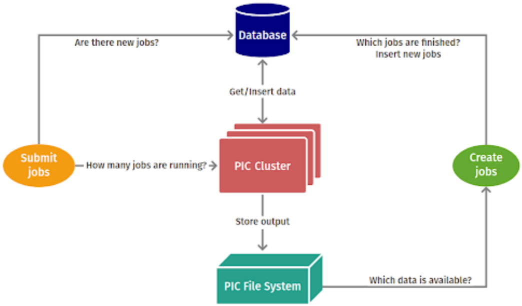

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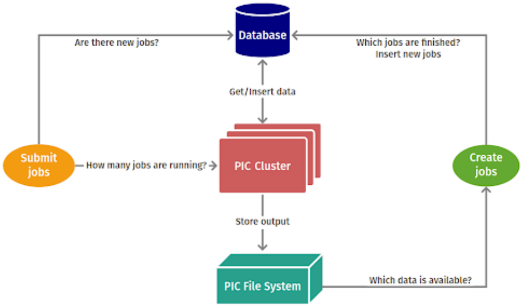

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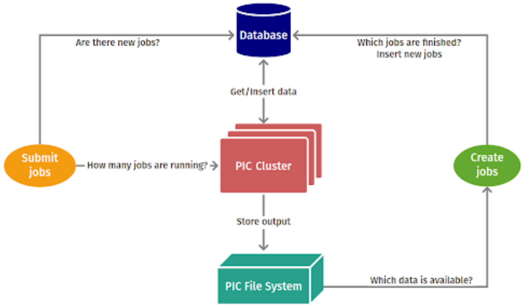

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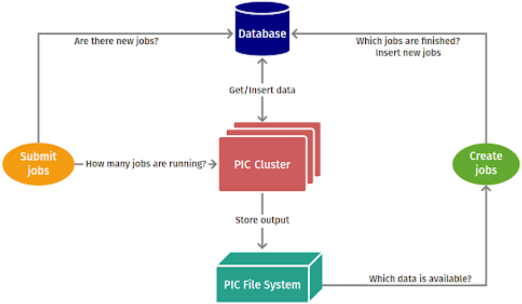
- Saving of the status of each analysis step allowing for easier error identification

autoMAGIC - Science Capacities:



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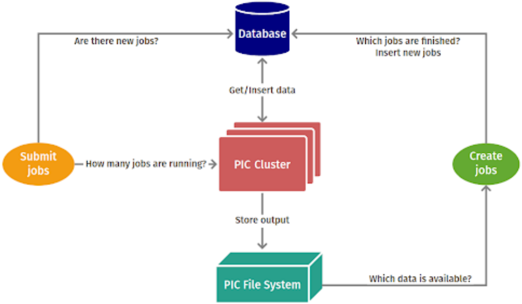

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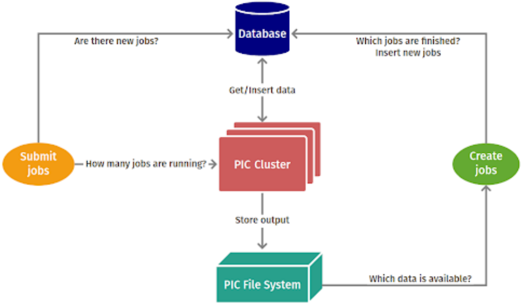

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- Cross-check to existing analyses confirming developed results

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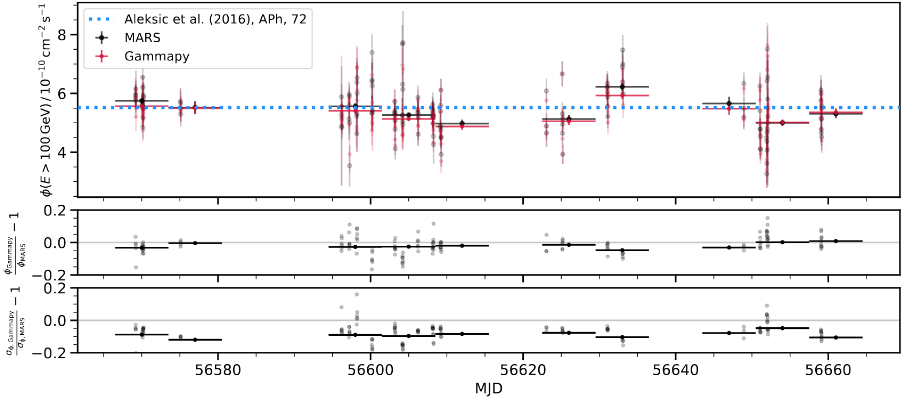

Credit: 10.1016/j.jheap.2024.09.011

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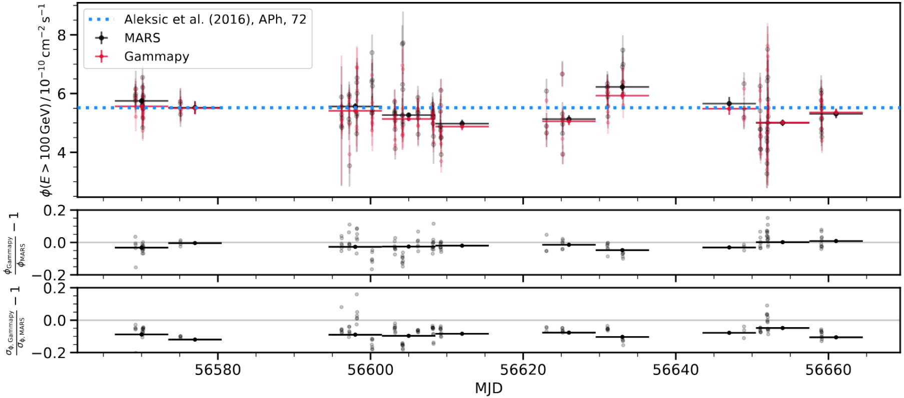

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- Reliability test have been performed, comparing with internal software pipelines
- Next step: Individual specialized autoMAGIC analysis use cases

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- Since CRPropa 3.0, time-dependence is included to account for variable sources

Credit: 10.1088/1475-7516/2022/09/035

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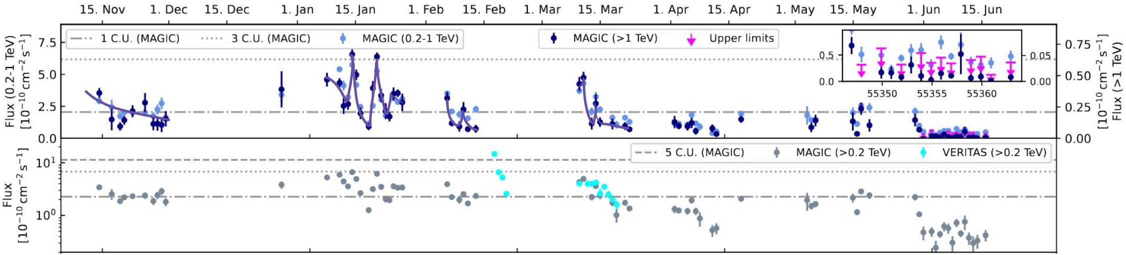
- The temporal theoretical modeling of gamma-ray fluxes can be performed with CRPropa 3.0
- Next step: Close collaboration between CRPropa & autoMAGIC to develop long-term lightcurve modeling



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