## **LISA Conference**



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# SATLAS 2: The updated package for analysis of counting data

SATLAS is a Python package for the analysis of hyperfine structure spectra from laser spectroscopy. The first version of the package was released in 2018 [1] and was quickly adopted by the community, cited in numerous high impact papers [2,3]. SATLAS 2 (https://iks-nm.github.io/satlas2/), released in 2023, is a new version of SATLAS, built with a simpler structure and offers speed-up of a factor 20-300 for fast simultaneous fitting of multiple spectra. It includes the simple chisquare fitting, maximum likelihood fitting and error estimation by performing random walks, as in SATLAS 1. The error estimation by random walk is extended to allow linear combinations of different walker moves for a better sampling of the random walk in parameter space. Furthermore, SATLAS 2 now offers easy implementation of custom models, such that non-laser spectroscopy data can also be analyzed with SATLAS.

In this contribution I will present the changes between SATLAS 1 and SATLAS 2, showing its speed-up with examples. Further, I will explain the different statistical methods that are implemented and how it can be used in Python.

#### REFERENCES

- [1] Gins, W., et al., Computer Physics Communications 222, 286-294 (2018)
- [2] Koszorús, Á., et al., Nature Physics 17, 439-443 (2021)
- [3] de Groote, R.P., et al., Nature Physics 16, 620-624 (2020)

### Field

Novel techniques and technologies for actinide research

### Secondary field

#### Call for support

No

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