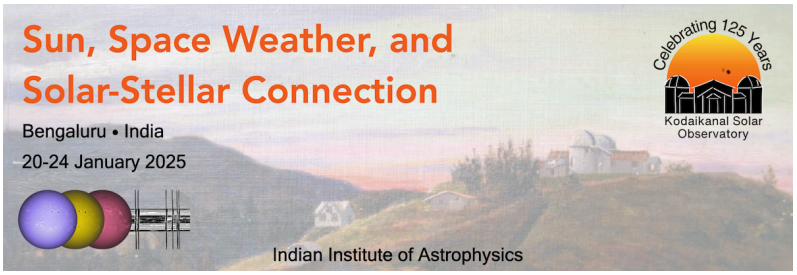


Contribution ID: **130** Type: **Poster**

# Improved detection of superflares on solar-type stars

Stellar flares are energetic eruptions and a critical indicator of magnetic activity on stars. Superflares, defined as flares with energies exceeding $10^{32}$ ergs, if they occurred on our Sun, could trigger severe space weather and result in widespread disruption of space-based technologies. While there is debate over whether such events have occurred in the Earth's past, understanding their frequency on solar-type stars is crucial for predicting the likelihood and recurrence of such an event on the Sun. An automated and unbiased flare detection method is essential for enabling these studies.

We have developed a Python-based stellar flare detection pipeline, which we have tested on optical light curve data from NASA's Transiting Exoplanet Survey Satellite (TESS). The flare detection process is entirely data-driven, identifying significant contiguous outliers for classification and energy calculations.

We are applying this pipeline to study the flare frequency distribution of solar-type stars, which will provide insights into the occurrence of superflares. This research will deepen our understanding of superflares on solar-type stars and has the potential to shed light on the evolution of stellar magnetic activity, as flares serve as probes of stellar magnetism and dynamo action.

## Contribution Type

Poster

## Theme

Solar - Stellar Connections

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