



Contribution ID : 61

Type : **Contributed talk**

Oxygen abundances as a key predictor of small planet hosts using gradient boosted decision trees

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Using a novel crossmatch of GALAH DR4 stellar abundances with K2 and TESS planet detections, we apply the gradient boosted decision tree ensemble model XGBoost to investigate relative importances of specific chemical abundances and molar ratios in predicting small planet hosts. In contrast to previous studies, we find a consistently high feature importance for oxygen across models. Using a probability threshold of $P > 0.80$, the [X/O] ensemble identifies 1,218 likely small-planet hosts, including 13 of 133 K2/TESS candidates. Abundance distributions reveal that the observed signal may be driven primarily by oxygen depletion. These results provide a targeted shortlist for follow-up observations while highlighting the need for larger host samples and more granular comparisons between planetary subclasses.

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No

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Yes

What is your career level?

MSc

Which keyword describes the area of focus of this talk?

Exoplanets

Primary author(s) : LIANG, Rosalind (University of Victoria)

Presenter(s) : LIANG, Rosalind (University of Victoria)

Session Classification : Exoplanets & Stars