Contribution ID: **254** Type: **Oral Presentation**

[INVITED] Symbolic regression and interpretable ML

Thursday, 11 July 2024 14:30 (40 minutes)

The drawback of the more traditional, numerical ML techniques is their opaqueness; it is not always clear what information is being used and how methods trained on (necessarily imperfect) simulations will perform when applied to real-world data. An alternative branch of ML —Symbolic Regression (SR) —has clear advantages in this regard. By searching for simple, analytic descriptions of the data, the benefit of SR algorithms over traditional ML methods is their interpretability and clear extrapolation behaviour when employed on data outside the range of the training set. As such, SR has developed into a vibrant field of research in ML and has been increasingly employed within the fields of astrophysics and cosmology. In this talk I will review the diverse range of methods uses within SR, discuss the benefits and drawbacks of these approaches, and highlight the exciting applications of SR in astrophysics.

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Session Classification: Cosmology & Simulations