



Contribution ID: 12

Type: Talk

Machine learning for new physics

Monday, November 27, 2023 5:21 PM (15 minutes)

While the benefits of machine learning for data analysis are widely discussed, I will argue that machine learning has also the great potential to inform us on interesting directions in new physics. Indeed, the current approach to solve the big questions of cosmology today is to constrain a wide range of cosmological models (such as cosmic inflation or modified gravity models), which is costly. In our recently published approach <https://arxiv.org/abs/2110.13171>, we propose to use unsupervised learning to map models according to their impact on cosmological observables. We can thus visualize which models have a different impact and therefore are worth investigating further, using this map as a guide to unlock information about new physics from the new generation of cosmological surveys. In this talk, I will explain the approach, its use case and its application to the space of modified gravity probed by cosmic shear.

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Session Classification: Contributed talks

Track Classification: Paris