

IberiCOS 2022



Contribution ID : 50

Type : not specified

The genetic algorithms and their cosmological applications

Friday, 6 May 2022 11:30 (15)

Machine learning algorithms have revolutionized the way we interpret data, as they can remove biases due to a priori chosen theoretical models. In this talk, I will give a brief overview of the Genetic Algorithms (GA), a particular machine learning approach, and then I will present specific applications to cosmology. In particular, I will show how the GA can be applied to cosmological data (type Ia supernovae, BAO, Cosmic Chronometers, growth rate data etc) in order to obtain model independent, theory agnostic and non-parametric reconstructions without assuming any dark energy model or a flat Universe. I will also briefly present some related Euclid forecasts but also an application of the GA to improved fits of the sound horizon at the drag redshift, which is of interest for BAO analyses.

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