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matryoshka: A suite of neural network based emulators for the power spectrum.

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Cosmological inference can be a computationally expensive task. Calculation of posterior distributions often requires sampling form a high dimensional parameter space, with a large number of nuisance parameters. Typically analyses require hundreds of thousands or even millions of model evaluations. Therefore, even analyses that use the most efficient perturbative models for predicting the power spectrum still require significant resources. Emulators offer a solution since they can be trained to accurately reproduce expensive model outputs whilst greatly reducing computational cost. In this talk I will present a publicly available, Python implemented, suite of neural network based emulators: matryoshka. I will present example analyses using some of the emulators included in matryoshka, and demonstrate that when using these emulators cosmological inference can be done in a coffee break rather than days or even weeks.

Main Topic

Supervised/Unsupervised/Semi-supervised Learning

Secondary Topic

Participation mode

In person

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