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Decaying dark matter and emulating CMB codes

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In the last few years, advances in artificial neural networks has allowed fast and accurate emulation of cosmic microwave background (CMB) observables and, to a lesser degree, large-scale structure observables. The potential speed-up of this approach is significant: the execution time of a CMB code such as CLASS is of the order 10 core-seconds, while the output of the neural network is of the order 0.1 core-seconds. However, building the neural network in the first place for a new model may erode the benefits entirely. In this talk I will discuss the framework CONNECT that we have developed exemplified using decaying dark matter models. I will also discuss profile likelihoods as a tool for discovering volume effects in Bayesian posteriors.

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