Sampling String Vacua Using Generative Models

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Abstract

We apply generative models to a key problem in the string compactification program, namely construction of type IIB string vacua. To this end, we make use of a Bayesian Flow Network, a generative model capable of handling discrete data, to generate flux vectors that give rise to type IIB vacua. Furthermore, we sample flux vacua that have certain desirable properties by employing a Transformer as a conditional generative model. We describe and apply further methods to chart different areas and apply the aforementioned models to a more general settings.

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