Data-centered studies of string compactifications

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Abstract

Geometric data is indispensable in string phenomenology. Systematic explorations of the ability of string theory to describe real world physics rely, to a large extent, on databases of relevant geometries and efficient computational tools to analyse string compactifications on example geometries. In this talk, we will cover two topics, that bring new tools and data to the fore. First, we will present developments of conditional, generative AI models for the type IIB string landscape. This is based on 2509.16029 alongside upcoming work with Sven Krippendorf, Zhimei Liu, Andreas Schachner and Moritz Walden. Second, we will announce a new database of G2 holonomy manifolds, based on work in progress with Andreas Braun and Elli Heyes.

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