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Deep Autoencoders in the Heterotic Orbifold Landscape

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In orbifold compactifications of heterotic string theory, the four-dimensional effective theory (like the gauge group and the particle spectrum) is fully determined by the so-called gauge embedding. However, it is difficult to see directly whether a given gauge embedding leads to "good" phenomenological properties of the resulting model (such as containing the Standard Model spectrum). In this talk, we present an approach using methods from machine learning that allows one to identify and characterize fertile patches in the landscape, i.e. classes of gauge embeddings that have a good chance to give rise to promising models. The information extracted in this way is instrumental for new search strategies for MSSM-like models in the heterotic orbifold landscape.

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