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Classifying Elliptically Fibered Toric Hypersurface CY3s

Friday 11 July 2025 17:00 (30 minutes)

The largest known set of Calabi-Yau threefolds originates from triangulations of the 473,800,776 four-dimensional reflexive polytopes constructed by Kreuzer and Skarke. Earlier work by Huang and Taylor showed that all but 29,223 of these polytopes admit at least one elliptic fibration. In this talk, we enumerate all such fibrations, finding a total of 2.25 billion fibrations, and classify their fiber and base types. We comment on generic and exotic features of these fibrations, such 6D SCFTs and gauge groups hosted on nontoric divisors. We conclude by discussing elliptic fibrations in the actual Calabi-Yaus built out of these polytopes.

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