Combinatorial Standard Models

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Abstract

I will present a new ensemble of Standard Model constructions in type IIB string theory on Calabi-Yau orientifold hypersurfaces in toric varieties. Our ensemble is defined by simple combinatorial requirements on 4d reflexive polytopes, and solutions to linear integer systems. It is therefore amenable to systematic enumeration even at the largest Hodge numbers (we find many explicit models with $h^{1,1}$ up to 100). Our construction thus provides a promising arena for investigating the string axiverse and for attacking the moduli stabilization problem in models with fairly realistic particle physics.

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