

Contribution ID: 26

Type: Talk in parallel session

## **Computation of Fermion Masses and Mixing in Geometric String Compactifications**

Friday 6 September 2024 14:50 (20 minutes)

The talk will outline recent progress in identifying realistic models of particle physics in heterotic string theory, supported by several mathematical and computational advancements which include: analytic expressions for bundle valued cohomology dimensions on complex projective varieties, heuristic methods of discrete optimisation such as reinforcement learning and genetic algorithms, as well as efficient neural-network approaches for the computation of Ricci-flat metrics on Calabi-Yau manifolds, hermitian Yang-Mills connections on holomorphic vector bundles and bundle valued harmonic forms. I will present a proof of concept computation of quark masses in a string model that recovers the exact standard model spectrum.

## Link to publication (if applicable)

https://arxiv.org/abs/2402.01615 and forthcoming paper

Author: CONSTANTIN, Andrei Presenter: CONSTANTIN, Andrei

Session Classification: Parallel sessions

Track Classification: Machine learning and AI