

Flux Landscape with Enhanced Symmetry Not on $SL(2, \mathbb{Z})$ Elliptic Points

Tuesday, 25 June 2024 15:45 (15 minutes)

We study structures of solutions for SUSY Minkowski F-term equations on two toroidal orientifolds with $h_{2,1}=1$. Following our previous study (2011.09154), with fixed upper bounds of a flux D3-brane charge N_{flux} , we obtain a whole Landscape and a distribution of degeneracies of physically-distinct solutions for each case. In contrast to our previous study, we consider a non-factorizable toroidal orientifold and its Landscape on which $SL(2, \mathbb{Z})$ is violated into a certain congruence subgroup, as it had been known in past studies. We find that it is not the entire duality group that a complex-structure modulus U enjoys but its outer semi-direct product with a “scaling” outer automorphism group. The fundamental region is enlarged to include the $|U| < 1$ region. In addition, we find that high degeneracy is observed at an elliptic point, not of $SL(2, \mathbb{Z})$ but of the outer automorphism group. Furthermore, \mathbb{Z}_2 -enhanced symmetry is realized on the elliptic point. The outer automorphism group is exceptional in the sense that it is consistent with a symplectic basis transformation of background three-cycles, as opposed to the outer automorphism group of $SL(2, \mathbb{Z})$. We also compare this result with Landscape of another factorizable toroidal orientifold. This work is based on arXiv:2311.12425 [hep-th].

Presenter: KAI, Takafumi

Session Classification: Parallel session