Institut Henri Poincaré

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String Theory in Greater Paris

Rencontres Théoriciennes

"Supergravité, théorie des cordes et théorie M"

Jeudi 5 Janvier 2023, 10:00

Thorsten Schimannek

LPTHE

The discrete Green-Schwarz mechanism in 6D F-Theory and Elliptic Genera of Non-Critical Strings

Anomalies in 6d theories can be cancelled by a generalized Green-Schwarz mechanism. This is not only true for local anomalies but also for global anomalies that in particular arise from discrete 0-form gauge symmetries. Anomaly inflow further relates these discrete 6d anomalies to 't Hooft anomalies of corresponding global discrete symmetries on 2d worldsheet theories of non-critical strings. The 't Hooft anomalies of these global symmetries can in turn be measured as a 'modular anomaly' of the twisted/twined elliptic genera. We will discuss these ideas both field theoretically and in the context of geometric engineering of 6d supergravities in F-theory. We find that the anomaly theory of 2-form fields is in general not unique but F-theory seems to prefer a particular choice. This suggests a new swampland of discrete charged spectra with anomalies that cannot be cancelled. We also present a derivation of the modular anomaly of the elliptic genera in terms of the 't Hooft anomaly using topological symmetry lines. We will then argue that in F-theory the elliptic genera with twisted boundary conditions are encoded in the topological string partition functions on various torus fibrations, that share the same Jacobian fibration, as well as certain non-commutative crepant resolutions. The corresponding modular properties will allow us to relate the global anomaly to the geometry of the F-theory compactification space. The talk is based on 2212.04503 with M. Dierigl and P. Oehlmann.

Institut Henri Poincaré, salle 314, 3ème étage

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