Contribution ID: **272** Type: **not specified**

The geometric II, III, IV of complex structure degenerations

Monday 7 July 2025 09:00 (30 minutes)

Complex structure degenerations of Calabi-Yau threefolds at infinite distance have played an important role in testing various quantum gravity conjectures.
At the same time, their geometric properties are relatively less intuitive compared to their counterparts in Kähler moduli space. In particular, new geometric insights are needed to establish the existence of the leading towers of light states, including in particular those of asymptotically light critical strings in emergent string limits.
We will explain the geometric origin of these key quantum gravitational ingredients. At a technical level, the new input is a geometric interpretation of the three-cycles with asymptotically vanishing volume. Among other things, we will explain how Type IIB string theory on Calabi-Yau threefolds can be seen to be dual to heterotic string theory without invoking mirror symmetry, and develop new predictions for the counting of asymptotically vanishing three-cycles and for the types of complex structure limits that can be geometrically realized on Calabi-Yau threefolds.

Presenter: WEIGAND, Timo