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String Theory in Greater Paris

Rencontres Théoriciennes

"Supergravité, théorie des cordes et théorie M"

Jeudi 15 Fevrier 2018, 11:45

Stefan Hohenegger

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Triality in Little String Theories

I discuss a class of little string theories (LSTs) with eight supercharges on the world-volume of N M5-branes probing a transverse $\mathbb{Z}_M$ orbifold. These M-brane configurations compactified on a circle are dual to M D5-branes intersecting N NS5-branes on $T^2 \times \mathbb{R}^{7,1}$ as well as to F-theory compactified on a toric Calabi-Yau threefold $X_{N,M}$. I argue that the Kähler cone of $X_{N,M}$ admits three regions associated with weakly coupled quiver gauge theories of gauge groups $[U(N)]^M$, $[U(M)]^N$ and $[U(NM/k)]^k$ where $k = \gcd(N, M)$. These provide low-energy descriptions of different LSTs. The duality between the first two gauge theories is well known and is a consequence of the S-duality between D5- and NS5-branes or the T-duality of the LSTs. The triality involving the third gauge theory is new and I demonstrate it using several examples.

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