

Institut Henri Poincaré  
11 rue Pierre et Marie Curie, 75231 Paris cedex 05  
**String Theory in Greater Paris**

**Rencontres Théoriciennes**  
**“Supergravité, théorie des cordes et théorie M”**

*Jeudi 15 Fevrier 2018, 11:45*

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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.*

**Institut Henri Poincaré, salle 314, 3<sup>ème</sup> étage**

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