Poster Presentation for String-Math 2018

- *Title:* Geometric engineering on flops of length two
- *Name:* Marco Fazzi
- *Affiliation:* Technion, Israel
- *Abstract:* Type IIA on the conifold is a prototype example for engineering QED with one charged hypermultiplet. The geometry admits a flop of length one. In this paper, we study the next generation of geometric engineering on singular geometries, namely flops of length two such as Laufer's example, which we affectionately think of as the *conifold 2.0*. Type IIA on the latter geometry gives QED with higher-charge states. In type IIB, even a single D3-probe gives rise to a nonabelian quiver gauge theory. We study this class of geometries explicitly by leveraging their quiver description, showing how to parametrize the exceptional curve, how to see the flop transition, and how to find the noncompact divisors intersecting the curve. With a view towards F-theory applications, we show how these divisors contribute to the enhancement of the Mordell–Weil group of the local elliptic fibration defined by Laufer's example.