

## SUSY enhancement via T-branes and Hitchin systems

*Thursday 23 May 2019 17:10 (20 minutes)*

In the last couple of years it was discovered that some 4d  $N=1$  quantum field theories flow in the IR to 4d  $N=2$  superconformal field theories (often of generalized Argyres-Douglas type), therefore showing a phenomenon of Supersymmetry Enhancement at the IR fixed point. The  $N=2$  IR theory is often non-lagrangian while the  $N=1$  UV theory is lagrangian, therefore such flows are extremely useful to learn features of the IR non-lagrangian theory, by using the UV formulation to compute RG flow protected quantities as for example the superconformal index. However, up to date it is not completely clear why such flows exist, and how the SUSY enhancement happens. Limiting ourself to the case of rank one theories, we show how it is possible to understand the enhancement phenomenon in a geometric way, by condensing a D3 brane probing a local singularity in F-theory corresponding to a T-brane of seven-branes. It is also possible to understand the enhancement via the moduli space of solutions of the (generalized) Hitchin system associated to such theories.

**Author:** Dr CARTA, Federico (DESY)

**Co-authors:** Dr SAVELLI, Raffaele (Roma Tor Vergata); Dr GIACOMELLI, Simone (Oxford)

**Presenter:** Dr CARTA, Federico (DESY)

**Session Classification:** Formal Field Theory and Strings

**Track Classification:** Formal Field Theory and Strings