

## **Perturbative methods in holography vs. Supersymmetric Localization**

*Saturday 7 December 2019 11:30 (30 minutes)*

We study supergravity BPS equations which correspond to mass- deformation of some representative AdS/CFT examples. The field theory of interest are  $N=4$ ,  $D=4$  super Yang-Mills, the ABJM model in  $D=3$ , and the Brandhuber-Oz fixed point in  $D=5$ . For these gauge theories the free energy with mass terms for matter multiplets is calculable in large- $N$  limit using supersymmetric localization technique. We suggest a perturbative method to solve the supergravity equations. For the dual of mass-deformed ABJM model we reproduce the known exact solutions. For the mass-deformed Brandhuber-Oz theory our method gives the holographic free energy in analytic form. For  $N=1^*$  deformations of  $N=4$  super Yang-Mills, we calculated exactly some expansion coefficients, which were only known numerically before our work.

**Presenter:** KIM, Nakwoo (Kyung Hee University)

**Session Classification:** Morning session