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**String Theory in Greater Paris**

**Rencontres Théoriciennes**

**"Supergravité, théorie des cordes et théorie M"**

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## Geometric Extremization for AdS-CFT and Black Hole Entropy

*We consider supersymmetric AdS3xY7 solutions of type IIB supergravity dual to N=(0,2) SCFTs in d=2, as well as AdS2xY9 solutions of D=11 supergravity dual to N=2 supersymmetric quantum mechanics, some of which arise as the near horizon limit of supersymmetric, charged black hole solutions in AdS4. The relevant geometry on Y(2n+1) was first identified in 2005-2007 and around that time infinite classes of explicit examples solutions were also found but, surprisingly, there was little progress in identifying the dual SCFTs.*

*We review new results which change the status quo. For the case of Y7, a variational principle allows one to calculate the central charge of the dual SCFT without knowing the explicit metric. This provides a geometric dual of c-extremization for d=2 N=(0,2) SCFTs analogous to the well known geometric duals of a-maximization of d=4 N=1 SCFTs and F-extremization of d=3 N=2 SCFTs in the context of Sasaki-Einstein geometry. In the case of Y9 a similar variational principle can be used to obtain properties of the dual N=2 quantum mechanics as well as the entropy of a class of supersymmetric black holes in AdS4 thus providing a geometric dual of I-extremization.*

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