

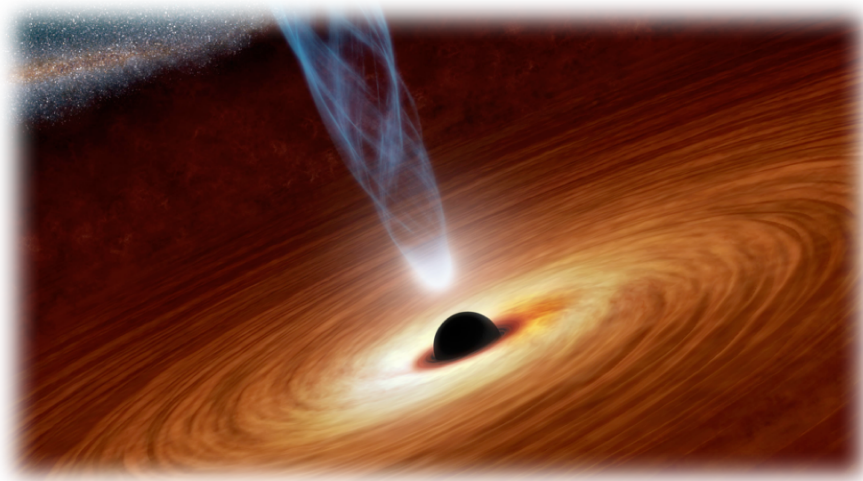
# The Quantum Structure of Black Holes

IPhT, CEA Saclay

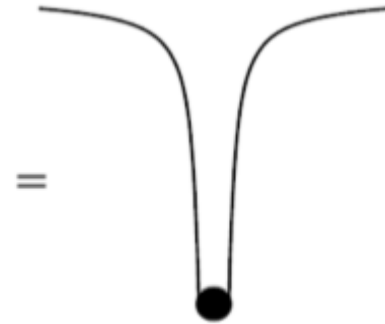
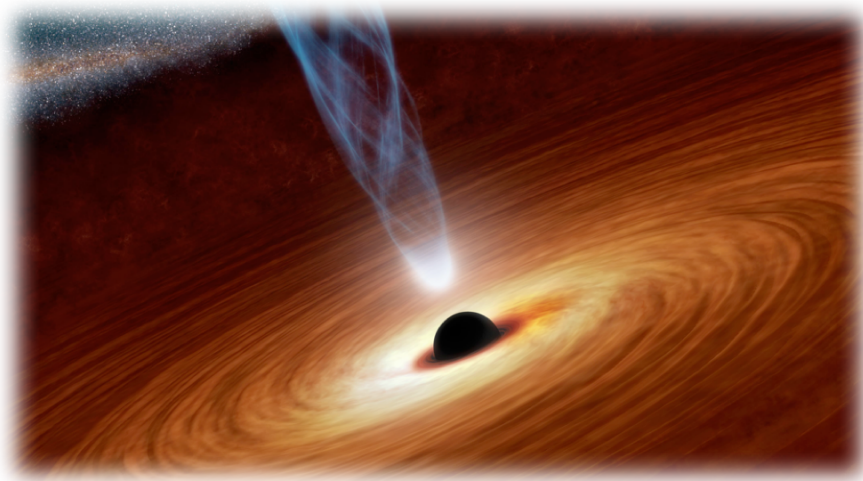
Supervisor **Iosif Bena**



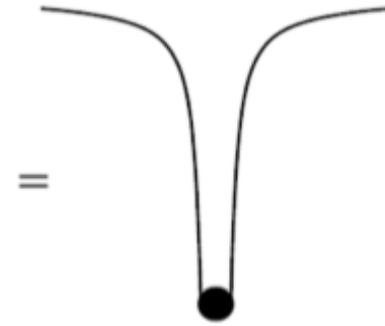
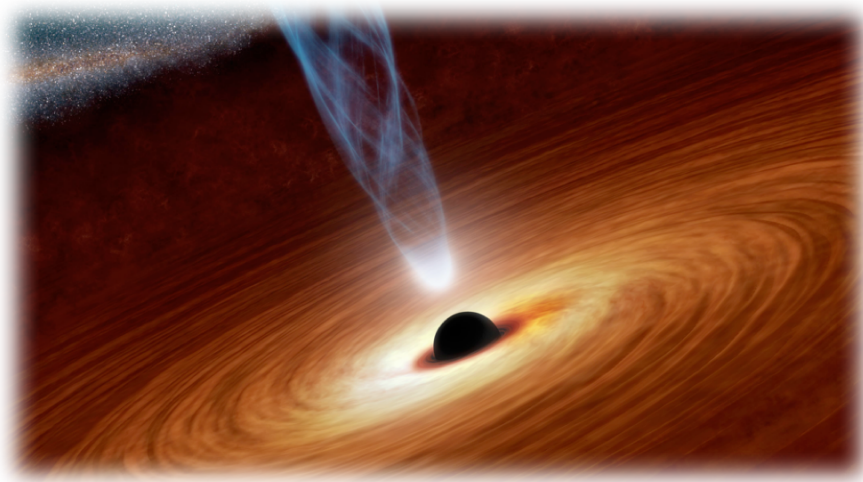
# Fuzzball proposal and microstate geometry program



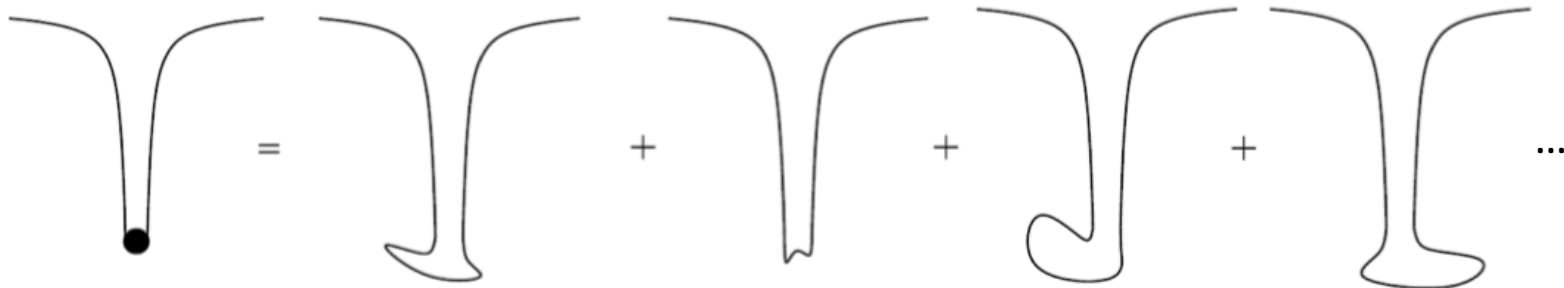
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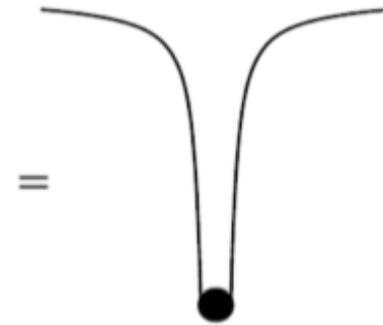
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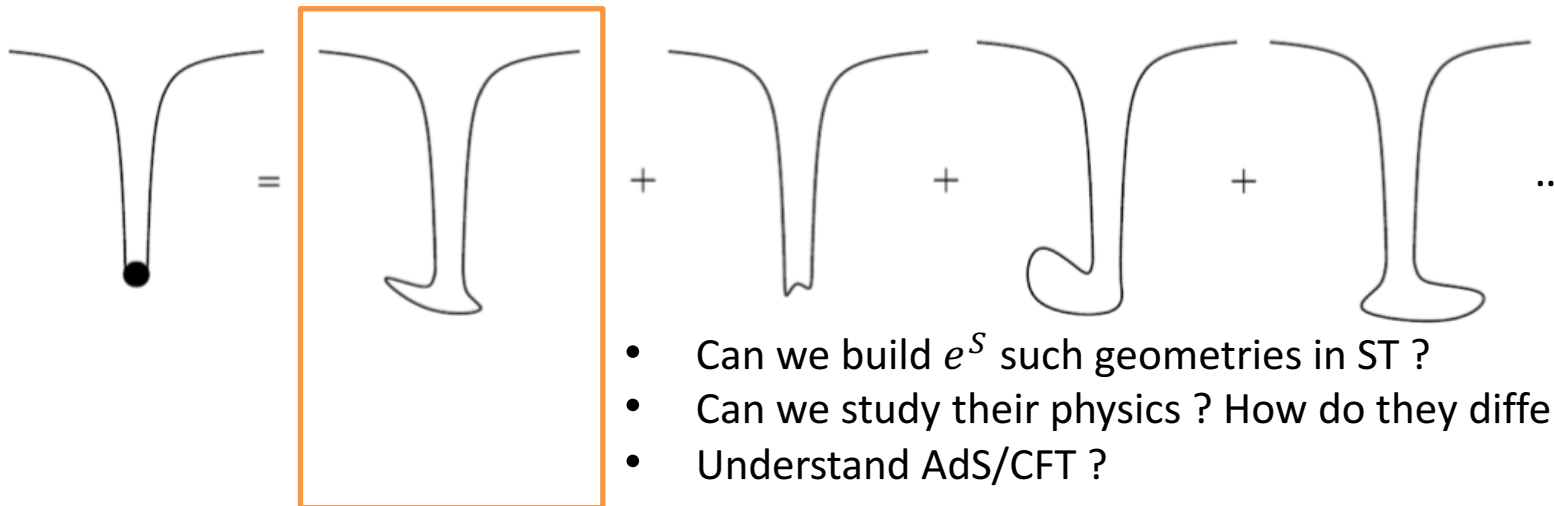
- Fuzzball proposal: Black hole = ensemble of smooth horizonless microstates



# Fuzzball proposal and microstate geometry program



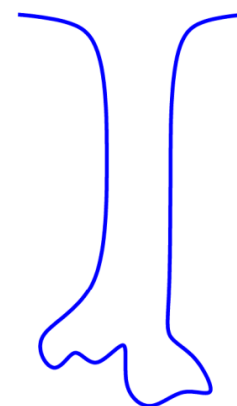
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# My work

- Construction of a large family of microstates of three-charge supersymmetric Black hole:
  - *Four-center bubbled BPS solutions with a Gibbons-Hawking base* , P. Heidmann, JHEP 2017
  - *A systematic construction of microstate geometries with low angular momentum* , I. Bena , P. Heidmann , P. Ramirez, JHEP 2017

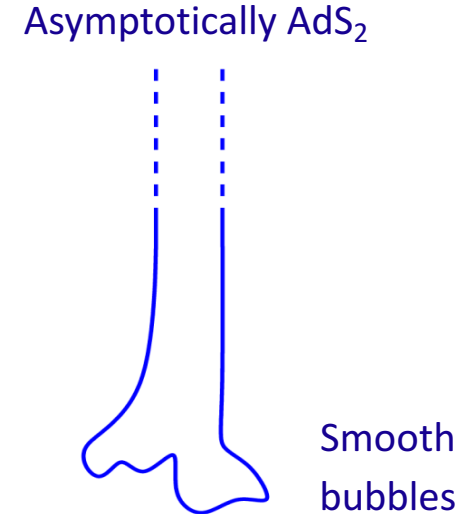
Asymptotically flat



Smooth  
bubbles

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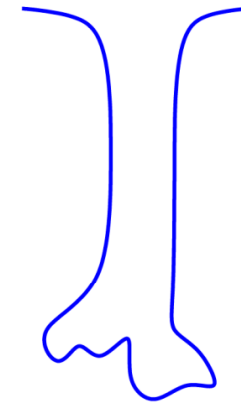
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Asymptotically NHEK



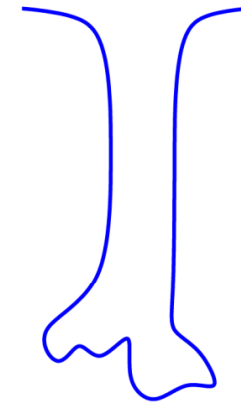
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- Study of simple D-brane system
  - *The full space of multicenter solutions with pure D-brane charges*, P. Heidmann, S. Mondal to appear 2018

Asymptotically NHEK



Smooth bubbles