

3. May 2017 - RTG Colloquium Oldenburg

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**Black hole formation and Critical Collapse in the Axion-Dilaton System in Diverse Dimensions**

**Abstract**

In the first part of the talk we try to come up with some basic notions about the subject as well as Black hole formation, explaining some details of the whole subject on GR and also why we have three different assumptions or ansätze for axion-dilaton system in type IIB String Theory. We then would like to study the gravitational collapse of the axion-dilaton system suggested by IIB in dimensions ranging from four to ten. We would also like to extend the previous analysis in the literature concerning the role played by the global  $SL(2, R)$  symmetry, evaluating the Choptuik exponents for different elliptic, parabolic and hyperbolic cases. Eventually we describe some of the open questions for two other assumptions and future directions. This talk is based on arXiv: 1108.0078 (published in CQG) and 1307.1378 (published in JCAP) in collaboration with my former supervisor Prof. Luis Alvarez-Gaume and some works in progress.