Black Holes as Blobs on a Black Brane

David Licht[a], **Roberto Emparan**[a,b], **Tomás Andrade**[a]

[a]*Departament de Física Quàntica i Astrofísica, Institut de Ciències del Cosmos, Universitat de Barcelona, Martí i Franquès 1, E-08028 Barcelona, Spain*

[b]*Institució Catalana de Recerca i Estudis Avançats (ICREA) Passeig Lluís Companys 23, E-08010 Barcelona, Spain*

tandrade@icc.ub.edu, emparan@ub.edu, david.licht@icc.ub.edu

Abstract

We demonstrate a new method to study black holes and their dynamics in the limit of large number of dimensions D. The large-D effective equations for black branes yield localised black hole-like blobs as end states of the Gregory-Laflamme instability. We obtain solutions that can be identified with Schwarzschild and Myers-Perry black holes and show that their main dynamical properties, including their quasinormal modes, are accurately captured in this description. We also construct new solutions: a novel class of rotating black bars and the elusive higher dimensional generalisation of Kerr-Newman type. This approach is a highly efficient way to study the evolution of instabilities or collisions of black holes at large D.