Holographic collisions in large D effective theory

Raimon Luna*[1] and Mikel Sanchez-Garitaonandia[2]

[1]Universitat de València – Spain
[2]CPHT Ecole Polytechnique, Paris – CPHT Ecole Polytechnique, Paris – France

Abstract

We study collisions of Gaussian mass-density blobs in a holographic plasma, using a large D effective theory, as a model for holographic shockwave collisions. The simplicity of the effective theory allows us to perform the first 4+1 collisions in Einstein-Maxwell theory, which are dual to collisions of matter with non-zero baryonic number. We explore several collision scenarios with different blob shapes, impact parameters and charge values and find that collisions with impact parameter below the transverse width of the blobs are equivalent under rescaling. We also observe that charge weakly affects the rest of quantities. Finally, we study the entropy generated during collisions, both by charge diffusion and viscous dissipation. Multiple stages of linear entropy growth are identified, whose rates are not independent of the initial conditions.

*Speaker