



Contribution ID: 71

Type: **not specified**

Collision Dynamics near the Critical Point from Holography.

Friday, 22 September 2017 10:00 (30 minutes)

We present the first out-of-equilibrium analysis of relativistic collision dynamics in the vicinity of a critical point. We numerically solve shock wave collisions in a one parameter family of holographic models with phase transitions of different orders. For a unique value of the parameter, the model exhibits a second order phase transition which connects a region of first order transition with an analytic cross-over. We study the post-collision dynamics in the vicinity of that critical point and analyse the out-of-equilibrium stress tensor in the aftermath of those collisions. We observe that in the vicinity of the critical point, independently of the nature of the transition, almost all the energy of the projectiles ends up in a quasi-static, slowly evolving blob of energy, as also observed in collisions with a strong first order phase transition. We discuss the applicability of hydrodynamics for those collisions and put our results into the context of searches for the critical point in QCD.

Primary authors: BEA, Yago; ATTEMS, Maximilian (University of Barcelona); CASALDERREY SOLANA, Jorge (University of Oxford); TRIANA, Miquel (University of Barcelona); ZILHÃO, Miguel

Presenter: CASALDERREY SOLANA, Jorge (University of Oxford)

Session Classification: Holography