Contribution ID: **5** Type: **not specified**

Hydrodynamization, asymptotics and the early to late time interpolation in relativistic hydrodynamics*

Wednesday 25 May 2022 10:00 (1 hour)

Dissipative relativistic hydrodynamics is expected to describe the late times, thermalised behaviour of strongly coupled fluids such as a strongly coupled super Yang-Mills plasma. These systems are then accurately described by a hydrodynamic series expansion in small gradients. Surprisingly, this hydrodynamic expansion is accurate even when the systems are still quite anisotropic: the non-hydrodynamic modes governing the non-equilibrium behaviour at very early-times become exponentially close to the hydrodynamic solution in an early process called hydrodynamization.

This early success is intimately related with the fact that the hydrodynamic expansion is asymptotic. The theory of transseries and resurgence explicitly shows how the non-hydrodynamic modes are in fact encoded in this late-time expansion. In this talk we will focus on a MIS-type model and use exponentially accurate summations of the the late-time resurgent transseries to recover the behaviour of the fluid before hydrodynamisation, and effectively match it to any given initial non-equilibrium condition. We will further show that such summations can provide analytic predictions beyond the late time regime.

Presenter: ANICETO, Inês (University of Southampton)