

The 129th HENPIC seminar by Dr. Mauricio Martinez Guerrero (North Carolina State U.), Dec. 10, 2020, Thursday, 10:30 am (UTC+8)

Talk title: Transasymptotics, dynamical systems and far from equilibrium fluid dynamics

Speaker: Dr. Mauricio Martinez Guerrero, North Carolina State U.

Abstract:

Hydrodynamics is a physical theory which describes long wavelength phenomena. Any introductory physics textbook indicates that the applicability of hydrodynamics is restricted to be near to local thermal equilibrium. This assumption seems to be very restrictive given the overwhelming experimental evidence of fluid behavior seen in nucleus-nucleus collisions and cold atoms systems. The fact that hydrodynamics can be applied to these non-equilibrated physical systems calls for a better understanding of the foundations of hydrodynamics.

In this talk I will discuss the most recent developments of the theory for in and out of equilibrium fluids. I shall present new theoretical results related to the emergence of hydrodynamic attracting behavior, non-hydrodynamic transport and its relation with transasymptotics and transseries. I shall also introduce in a pedagogical manner a new set of mathematical tools used frequently to analyze dynamical systems in the context of hydrodynamics. I will conclude by discussing new possibilities for future research directions.

Self-introduction:

Mauricio Martinez Guerrero, currently a research scholar at North Carolina State University. Previously he was postdoctoral researcher at Ohio State University, Universidade de Santiago de Compostela and the Institute for Advanced Studies in Frankfurt. He did his PhD in Frankfurt University. His research work focuses to understand the behavior of matter when it is subject at extreme conditions like high temperatures, pressures and/or densities. More specifically, his work has been related with the formulation of anisotropic hydrodynamics, studies of color decoherence in a QCD medium, development of new theoretical tools to analyze far-from-equilibrium dynamics.

Presenter: Dr MARTINEZ GUERRERO, Mauricio (North Carolina State U.)