

Talk Titles and Abstracts – Thursday 12 January

11.30-11:50: **Laura Currie** (Durham University)

Talk Title: The dynamics of stars and planets

Abstract: The evolution of stars and planets is influenced by turbulent flows occurring in their interiors; these flows transport heat and are responsible for generating the magnetic fields observed in stars and planets. Often, the interior flows of astrophysical objects are convective (e.g., all stars transport some of their energy by convection, as do gaseous giant planets) and convection is believed to be responsible for the driving of large-scale flows in the interiors of these objects, as well as driving the dynamo that amplifies a seed magnetic field and then sustains it against decay. Moreover, stellar (and some planetary) interiors are highly stratified; the fluid density drops off over many scale heights which can have profound effects on the dynamics of the interiors. In addition, stars and planets rotate, some very rapidly, which further influences the flow dynamics, heat transport and magnetic field generation. Much of the picture of how convection, rotation, magnetism and stratification fit together to determine the evolution of a star or planet is still incomplete. In this talk, I will briefly review some of the key unanswered questions in this area and present results of idealised mathematical models that we have constructed in an attempt to provide answers.

11.50-12.10: **Claudia Neves** (Kings College London)

Talk Title: Extreme value statistics born out of domains of attraction

Abstract: Extreme value statistics is essentially concerned with the modelling of rare events which are hard to predict and occur with only little warning. In this talk, I will address a number of challenges highlighted in the literature and how these align with the domain of attraction characterisation for extremes. Such a characterisation stems from a suite of mildly restrictive conditions, qualitative in nature, which not only provide computational convenience but also furnish sharp approximations to asymptotically justified models for extreme values, a key aspect to any statistical testing procedure as well as interval estimation methodology in a nonparametric setting.