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The turbulent dynamics of accretion disks

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Accretion disks are flattened, differentially rotating gaseous structures that can be found surrounding young stars, white dwarfs, neutron stars, and black holes. Understanding the physical processes that determine the rate at which matter accretes and energy is radiated in these disks is vital for unraveling the formation, evolution, and fate of almost every type of object in the Universe. These processes are regulated by the rate at which angular momentum can be transported outwards. It is currently thought that the transport of angular momentum is mediated by magnetohydrodynamic turbulence. In this talk, I will give an overview of some of the basic ideas that have been around for the last few decades and will argue that a first-principles theory to describe magnetohydrodynamic turbulence in disks will likely have to consider the anisotropic nature of the flow at a fundamental level.

Presenter: Dr PESSAH, Martin (Niels Bohr International Academy)