Theoretical Physics Seminars

Black Hole Horizon as a Fluid and the Outlines of a Transport Theory

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When: JUNE 12 , 2017 MONDAY 4:00PM

Place: ROOM 469

It has been known for a long time that the horizon of a black hole behaves like a viscous fluid. This is very suggestive in view of the fact that black holes possess a large entropy. Here we show how to construct a transport theory for the horizon-fluid with the final aim of developing a microscopic theory for this fluid. We shall determine the coefficient of bulk viscosity for the horizon-fluid and show that it indicates that the fluid system has a mass gap. Then we shall also briefly discuss the shear viscosity and the electrical conductivity of this fluid. Finally, based on the evidence gathered so far, I shall suggest what kind of field theory might be expected to underly the macroscopic picture of the horizon-fluid.

All are welcome