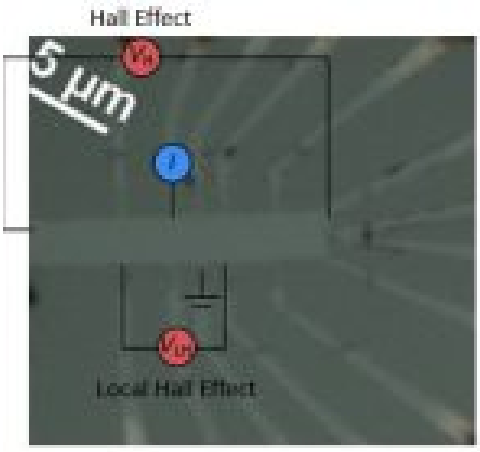
The linear resistivity: rapid thermalization and the minimal viscosity



The most famous strange property of the cuprate strange metals is the linear-in-T electrical resistivity.

Presently there is one mechanism identified in holography that is consistent with all available data. This was first presented in Holographic duality and the resistivity of strange metals.

It is remarkably simple: the rapid thermalization at work turning the strange metal into a hydrodynamical fluid despite the relatively strong disorder and this is in turn governed by the mimimal viscosity with as outcome that the resistivity is proportional to the entropy which is in turn measured to be of the Sommerfeld type.

An experimental protocol is presented showing that by precision measurements at various dopings this hypothesis can be scrutinized. In addition, the presence of hydrodynamical flows can be directly studied using quantum-transport devices (figure) that have been successful in proving the presence of hydro in graphene, with the caveat that in the cuprates Reynold numbers have to be very large.