Contribution ID: **15** Type: **not specified**

Holographic p-wave Superfluids

We discuss holographic duals of strongly interacting gauge theories which show properties of superfluids. In this talk we consider p-wave superfluid condensates which in addition to an Abelian symmetry also break the spatial rotational symmetry. First we examine a phenomenological gravity setup, a non-Abelian Einstein-Yang-Mills theory, and therein construct black hole solutions with a vector hair at low temperature which are dual to the superfluid states. In this model we obtain that the phase transition to the superfluid phase is second order and becomes first order as we increase the number of charged degrees of freedom. Finally we embed this phenomenological model into string theory which allows us to identify the dual field theory explicitly. This dual field theory is a strongly coupled gauge theory which contains matter in the fundamental representation of the gauge group. In this sense it is similar to QCD. In this theory, the superfluid states may be interpreted as vector meson condensates which are also expected in QCD.

Primary author: KERNER, Patrick (Max-Planck-Institut für Physik)

Presenter: KERNER, Patrick (Max-Planck-Institut für Physik)