

Rotating Plasmas Quark Gluon Plasmas (QGP) produced at Brookhaven's RHIC (Relativistic Heavy Ion Collider) and CERN have been of interest to both theoretical and experimental communities. Heavy ions (like Au or Pb), collide to produce such a fluid. Head-on collisions have negligible vorticity. Otherwise, collisions of center were found by the STAR collaboration to have the highest vorticity in a natural phenomenon. It's well known that the QGP thermalizes quickly with respect to the time scale of the system. Despite the large couple hydrodynamical descriptions worked "unaturally" well.

With the AdS/CFT holographic duality, we calculated transport coefficients of an analogous strongly CFT to that of QCD at finite temperature and vorticity. The dual of a rotating CFT is a rotating blackhole in 5 dimensional AdS. This black hole is an Myers-Perry AdS blackhole. Over the course of three papers, we find the three results. One, for the hydrodynamic regime, the measure of the effectiveness of hydrodynamical increases as extremality is approached. Two, locally, the transport coefficients of dual plasma equivalent to the transport of boosted relativistic fluid. Three, despite the lack of separability out of time correlators (OTOC) were calculated along with the associated "chaos" transport - the Lyapunov exponent and butterfly velocity.

Sakai-Witten-Sugimoto Instantons

Two-Component Scalar Model