On the Navier-Stokes equations on surfaces.

In this talk, the motion of an incompressible viscous fluid on compact surfaces without boundary is studied. Local in time well-posedness is established in the framework of Lp-Lq maximal regularity for initial values in critical spaces. It will be shown that the set of equilibria consists exactly of the Killing vector fields. Each equilibrium is stable and any solution starting close to an equilibrium converges at an exponential rate to a (possibly different) equilibrium. In case the surface is two-dimensional, it will be shown that any solution with divergence free initial value in L_2 exists globally and converges to an equilibrium.