V. Sverak: On Serrin's Weak-Strong Uniqueness Theorem for the Navier-Stokes Equation

In 1930s Leray introduced the notion of weak solutions for the Navier-Stokes equations and showed that the classical Cauchy problem has a at least one global solution in this class. However, the uniqueness of the solutions has not been established. Around 1960, extending earlier works of several authors on the subject, Serrin identified a class of solutions for which uniqueness can be proved. We will discuss recent developments concerning these topics, which suggest that Serrin's assumptions are close to being optimal.