1162-76-212 **Tuan Ngoc Pham*** (tuan.pham@mathematics.byu.edu), UT. *Stochastic models of the Navier-Stokes equations and the problem of stochastic explosion.*

In 1997, Le Jan and Sznitmann introduced a probabilistic method for the deterministic Navier-Stokes equations (later relaxed to permit the possibility of stochastic explosion) in which the solution is constructed from a (possibly explosive) stochastic branching process. This opened an interesting approach to study the existence and uniqueness of solutions alternative to many well-known analytic approaches, e.g. those of Leray (1930s), Kato, Fujita (1960s, 80s) and others. Central to Le Jan-Sznitmann's approach is the so-called majorizing kernel. The choice of majorizing kernels is not unique. Two known majorizing kernels are: the self-similar kernel and the Bessel kernel. Each choice gives a different branching distribution. The question of whether a branching process terminates eventually is known as the "stochastic explosion" problem. This question is of its own interest in probability theory, whether or not the branching process is tied to a PDE. A classical method to treat such a problem is perhaps using large deviation estimates. In this talk, I will briefly explain an alternative method called "cutset argument", and apply it to show that the Bessel kernel results in a non-explosive branching process. Joint work with Radu Dascaliuc, Enrique Thomann, and Edward Waymire. (Received August 31, 2020)