**Title:** The Monge-Ampère equation with an application to the 2D incompressible Navier-Stokes equations,

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**Abstract:** The Monge-Ampère equation is a fully nonlinear 2nd order PDE which arises in several areas, including the problem of prescribed Gauss curvature in riemannian geometry and in the problem of optimal transport. In the talk we will discuss the application of the Monge-Ampère equation in the theory of the 2D incompressible Navier-Stokes equations. We will address the problem of determining the velocity $u$ of the fluid from the pressure $p$. For this reason we will sketch the basic theory of the Monge-Ampère equation and we will present a rather neat proof of the nonexistence of velocity fields $u$ corresponding to a certain family of functions $p$. Moreover, we will observe a number of similarities between the properties of the Monge-Ampère equation and the properties of the Laplace equation.

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