1030-35-98 **Pierre Germain** and **Natasa Pavlovic*** (natasa@math.princeton.edu), Department of Mathematics, The University of Texas at Austin, 1 University Station, C1200, Austin, TX 78712, and **Gigliola Staffilani**. *Regularity of solutions to the Navier-Stokes equations evolving from small initial data in a critical space.*

In this talk we will present a regularity result for solutions to the Navier-Stokes equations evolving from small initial data in a critical space in $\mathbb{R}^n$.

More precisely, in 2001 H. Koch and D. Tataru proved the existence of global in time solutions to the incompressible Navier-Stokes equations in $\mathbb{R}^n$ corresponding to the initial data small enough in BMO^{-1}. We prove that under certain smallness condition on the initial data in BMO^{-1}, the solutions constructed by Koch and Tataru are more regular. As a consequence, we obtain a decay estimate in time for any space derivative, and space analyticity of the solution. Also as an application of our regularity theorem, we prove a regularity result for self-similar solutions. (Received July 24, 2007)