1067-35-2106   **Milton C Lopes Filho** (`mlopes@ime.unicamp.br`), **Dongjuan Niu** (`niuniudj@gmail.com`), **Edriss S Titi** (`etiti@math.uci.edu`) and **Helena J Nussenzveig Lopes*** (`hlopes@ime.unicamp.br`), Department of Mathematics, IMECC, Rua Sergio Buarque de Holanda, 651, University of Campinas - UNICAMP, Campinas, SP 13083-859, Brazil.
Two-dimensional incompressible flows as limits of 3D helical flows. Preliminary report.

It is known that the three-dimensional Navier-Stokes equations are invariant under helical symmetry and well-posed, globally in time. In this talk we investigate the limit behavior of a family of helical, viscous flows to their corresponding two-dimensional limits, in two different situations. First, we consider the limit as the helices become straight lines. Next we consider the limit as the helices oscillate strongly and flatten out. In the latter scenario there is an intimate relation between this limit behavior and the limit behavior of the Navier-Stokes equations in a thin domain with vanishing thickness. (Received September 22, 2010)