

**SMU** Department of Mechanical  
Engineering  
**SEMINAR**

**“Viscous starting flow past a flat plate”**

**Professor Monika Nitsche**

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**Friday, October 18, 2013**

**3:00 p.m. – 4:00 p.m.**

**Location: Huitt-Zollars Pavilion**

**Abstract:** Numerical simulations of viscous flow past a flat plate moving in direction normal to itself reveal details of the vortical structure of the flow. At early times, most of the vorticity is attached to the plate. We introduce a definition of the shed circulation at all times and show that it indeed represents vorticity that separates and remains separated from the plate. Scaling laws for the shed circulation, and contributions to the shedding rate across various boundary components are presented, as well as their dependence on Reynolds number. The simulations provide benchmark results to evaluate simpler separation models such as point vortex and vortex sheet models.

A comparison with vortex sheet results is included.

**Bio:** Monika Nitsche is an Applied Mathematics Professor at the University of New Mexico. She received her PhD in 1992 from the University of Michigan, and held several post doctoral positions (UC Boulder, IMA, OSU, Tufts U), until she and her husband settled in Albuquerque. She works in computational fluid dynamics with emphasis on vortex flows and on interfacial flows, both in the inviscid and the highly viscous Stokes limits.