1036-65-80 **Shilpa Madangopal Khatri*** (khatri@cims.nyu.edu), Courant Institute, Dept of Mathematics, 251 Mercer St., New York, NY 10012, and **Anna-Karin Tornberg**. *A Numerical Method for Soluble Surfactants on Moving Interfaces.* Preliminary report.

In many real world multiphase flow problems, there are surfactants present. These are surface reacting agents that modify the strength of the surface tension. The concentration of the surfactant on the interface separating the fluids can be modeled with a time-dependent differential equation defined on the time-dependent and deforming interface. For soluble surfactants, this is also coupled to a PDE for the concentration of surfactants in the bulk.

We present a second order method based on an explicit but yet Eulerian discretization of the interface. We use standard finite difference schemes on the discretization of the interface to solve the PDE for the surface concentration. The PDE for the concentration in the bulk will, in the spirit of interface tracking methods, be solved on a fixed uniform grid. The interface arbitrarily cuts through the uniform grid so the boundary flux condition for the bulk surfactant needs a special treatment. We will discuss the details of this implementation and show results in two dimensions. (Received January 14, 2008)