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**Thomas Hagen\*** ([thagen@memphis.edu](mailto:thagen@memphis.edu)), Department of Mathematical Sciences, The University of Memphis, Memphis, TN 38152. *Semigroup theory for Yeow's equations of free liquid films*. Preliminary report.

The mathematical description of free liquid films (e.g. fluid sheets formed by film casting) poses serious analytical challenges. In the simplest case, this description – which is essentially due to Y. L. Yeow (JFM 66, 1974) – takes the form of a nonlinear transport equation coupled to an elliptic system of momentum equations in two-dimensional space.

In this talk we will concentrate on important issues related to the spectral and linear stability of stationary solutions. Specifically, we will show that the linearized equations satisfy the semigroup property and that the semigroup gains in smoothness as time progresses. This latter result is based on elliptic estimates for the system of linear momentum equations that do not follow from standard elliptic theory. Existence results for the full nonlinear equations will be presented if time permits. (Received August 10, 2005)