

1106-VL-1415      **Fatma N. A. Mohamed\*** (fmohamed@math.wvu.edu), West Virginia University. *Thin viscous films: thinning driven by surface-tension energy dissipation*. Preliminary report.

In this talk I will present some results for thin viscous films, which are mainly from my joint work with A. Tudorascu of West Virginia University. We study the evolution of a thin film of fluid modelled by the lubrication approximation for thin viscous films. We prove existence of (dissipative) strong solutions for the Cauchy problem when the subdiffusive exponent ranges between  $3/8$  and  $2$ ; then it follows that these solutions tend to zero at rates matching the decay of the source-type self-similar solutions with zero contact angle. Finally, we introduce the weaker concept of dissipative mild solutions and we show that in this case the surface-tension energy dissipation is the mechanism responsible for the  $H^1$ -norm decay to zero of the thickness of the film at an explicit rate. (Received September 12, 2014)