1100-49-364 **Bhagya Athukorallage*** (bhagya.athukorala@ttu.edu), Department of Mathematics and Statistics, Broadway and Boston, Lubbock, TX 79409, **Larry Zhang** (larryzhang101@gmail.com), Coldwater Canyon Ave, Studio City,, CA 91604, and **Ram Iyer** (ram.iyer@ttu.edu), Department of Mathematics and Statistics, Broadway and Boston, Lubbock, TX 79409. *Energy dissipation due to the contact line motion of a droplet on a surface with contact angle hysteresis.*

A capillary surface is an interface that forms between two nonmiscible fluids. When a capillary surface contacts with a non-ideal solid surface, the motion of the three-phase contact line (solid-liquid-gas) results in an energy dissipation. This energy dissipation mainly results due to the contact angle hysteresis phenomenon and the viscous friction in the fluid involved.

In this talk, we consider a droplet on a solid surface, and experimentally measure the droplet radius, height, and contact angles while varying its volume. Using an energy minimization principle, we propose a mathematical model for the liquid interface of a symmetric liquid droplet. With the aid of the experimental data, we numerically obtain droplet meniscus profiles for given capillary pressures, and calculate the energy dissipation due to the contact angle hysteresis effect. Our computations show that the contribution to the energy loss from wetting energy dominates the surface energy and the volume energy. (Received February 10, 2014)