1124-76-385 **Christiaan F Ketelaar*** (ketelaar@udel.edu), 11 Thorn Ln, Apt 6, Newark, DE 19711, and **Lan Zhong** and **R J Braun**. *Mathematical Modeling of Blob-Driven Tear Film Breakup.* Preliminary report.

Tear film break up (TBU) can occur after imperfections in the lipid layer arise. The imperfections may cause elevated evaporation, which causes TBU for large enough spots and grooves and for fast enough evaporation. TBU also occurs near smaller features in the lipid layer. These are apparently blobs of lipids that do not spread and which are too small for the evaporative mechanism to account for the dynamics. We investigate the tear film dynamics near a model rigid blob with a fixed constant surfactant concentration. We develop the lubrication-type equations that govern the tear film thickness, surfactant concentration, and osmolarity in the tear film beneath and near the blob. We perform numerical simulations for the evolution of the tear film thickness and analyze how the size of the blob, as well as the surfactant properties and transport, affect tear film dynamics. The thinning induced by the blob is of the correct time scale to compare with in vivo observations, and close comparison with the experiments will be made. (Received September 13, 2016)