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Modeling Tear Film Dynamics on a 2-D Eye-shaped Domain LONGFEI LI, RICHARD BRAUN, University of Delaware, KARA MAKI, Rochester Institute of Technology, WILLIAM HENSHAW, Lawrence Livermore National Laboratory — We study tear film dynamics on a 2-D eye-shaped domain using a lubrication model. Time dependent flux boundary conditions that model the lacrimal gland tear supply and punctal drainage are imposed. We solved the model equations with Overture computational framework. Results reveals our model captures the hydraulic connectivity and other key physics of human tear film observed *in vivo*. Comparisons are made with existing models and experiments. Should time permit, osmolarity dynamics (salt ion concentration) will be included.

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