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Kara L. Maki* (maki@math.udel.edu), 324 Ewing Hall, Department of Mathematical Sciences, University of Delaware, Newark, DE 19716, and **Richard J. Braun**, **William D. Henshaw** and **P. Ewen King-Smith**. *Human tear film dynamics with an overset grid method*.

We present recent progress in the understanding of the dynamics of the human tear film on the complex eye-shaped geometry. The evolution is modeled during relaxation (after a blink) using lubrication theory and the effects of viscosity, surface tension and gravity are explored. The highly nonlinear governing partial differential equation is solved on an overset grid by a method of lines coupled with finite differences. Our two-dimensional simulations, calculated in the Overture framework, recover features seen in one-dimensional simulations and mimic some experimental observations like hydraulic connectivity around the lid margins. (Received September 16, 2008)