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**Human Tear Film Dynamics with an Overset Grid Method**[1]
KARA MAKI, RICHARD BRAUN, University of Delaware, WILLIAM HENSHAW, Lawrence Livermore National Laboratory, P. EWEN KING-SMITH, The Ohio State University — 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.

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