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Tim Reid* (treid5@gmu.edu), 12801 Middleton Ln, Fairfax, VA 22033, and **Daniel Anderson**, 4400 University Drive, MS3 F2, Fairfax, VA 22030. *Solving a Tear Film Model with a Spectral Method*. Preliminary report.

This research computes a numerical solution to a tear film thickness model. The model is a partial differential equation that approximates the thickness of a tear film on a contact lens in a blinking eye where the contact lens motion is governed by an ODE that depends on the blinking. The motion of the eyelid and contact lens affect the boundary conditions of the PDE. The numerical solution is calculated using a Chebyshev spectral method for the spatial derivatives and the method of lines for the time evolution. The numerical solution is then compared to similar models that measure tear film thickness in the absence of a contact lens and during an up/down saccade of the eye. (Received September 20, 2016)