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Caleb Logemann* (logemann@iastate.edu) and **James Rossmannith**. *High Order Local Discontinuous Galerkin Method for Solving Nonlinear Thin Film Equations.*

Thin Film Equations are useful in many applications including ice buildup on aircraft. We introduce a Local Discontinuous Galerkin method for numerically solving this type of equation. Time stepping is implemented with a Runge-Kutta IMEX scheme to maximize efficiency. The nonlinear convection term is able to be handled explicitly, while the nonlinear diffusion term is handled implicitly. This allows for much larger time steps to be taken. Our method efficiently solves the implicit nonlinear fourth order diffusion equation by linearizing the operator and doing a Picard iteration. We are able to achieve high order convergence with a minimal number of Picard iterations. (Received September 16, 2019)