1145-34-1352   **Joseph Paullet*** (`jep7@psu.edu`). *Analysis of Stagnation Point Flow of an Upper-Convected Maxwell Fluid.*

Several recent papers have investigated the two-dimensional stagnation point flow of an upper-convected Maxwell fluid by employing a similarity change of variable to reduce the governing PDEs to a nonlinear third order ODE boundary value problem (BVP). In these previous works, the BVP was studied numerically and several conjectures regarding the existence and behavior of the solutions were made. The goal of this talk is to mathematically verify these conjectures. We prove the existence of a solution to the BVP for all relevant values of the elasticity parameter. We also prove that this solution has monotonically increasing first derivative, thus verifying the conjecture that no "overshoot" of the boundary condition occurs. Uniqueness results are presented for a large range of parameter space and bounds on the skin friction coefficient are calculated. (Received September 21, 2018)