1154-35-430   **Julienne Kabre*** (`julienne_kabre@baylor.edu`) and **Qin Sheng**. *A splitting approximation for the numerical solution of a self-adjoint quenching problem.*

Ideal combustion processes are often modelled via nonlinear reaction-diffusion equations with singular forcing terms. Our preliminary work considers the numerical solution of such a partial differential equation problem, where a self-adjoint operator with variable diffusion coefficient is considered. Traditional Peaceman-Rachford-Strang splitting is used for time stepping of the semi-discrete system of equations obtained. Conditions are derived to ensure the monotonicity, positivity, and linear stability of the finite difference method. Simulation experiments are provided to validate our splitting approximation. (Received September 03, 2019)