1096-76-2496 **Joanna A Bieri*** (joanna_bieri@redlands.edu). *Computational Modeling of the Dynamics of Edge Flames in Narrow Channels.* Preliminary report.

Edge flames are fundamental two dimensional structures that appear in the burning of non-premixed flames in narrow channels. Experimental work has shown a surprising range of behaviors for these flames including oscillations along the length of the narrow channel and flame extinction-reignition patterns. This work models the edge flame in a narrow channel as a reacting two dimensional flow of fuel and oxidizer. Under the diffusive-thermal assumption, this leads to a coupled system of three nonlinear partial differential equations for the flame, which are solved numerically. When we remove the thermal-diffusive assumption, allowing for density variations, the flame equations are coupled with the underlying fluid flow. The full steady state equations are solved numerically to determine the effects of thermal expansion. We consider both symmetric and non-symmetric flames along with conditions for the combustor walls ranging from adiabatic to heat conduction. The goal of this work is to better understand flame oscillations, extinction, and reignition. (Received September 17, 2013)