Type Ia supernovae (SNe Ia) are bright stellar explosions thought to occur when a runaway thermonuclear reaction incinerates a compact star known as a white dwarf (WD). In many models, the explosion begins with a flame born in the turbulent environment near the center of the white dwarf. The effect of turbulence on the evolution of the nascent flame is incompletely understood and is the subject of active research. The range of length scales from the full star (~10^14 cm) to the laminar flame width (~10^1 cm) prevent full-star simulations from resolving the turbulence-flame interaction (TFI) directly. A single-degenerate paradigm of SNe Ia, the WD experiences ~1000 year period of convection as carbon fusion heats the core. When the nuclear burning timescale becomes shorter than the turnover time for convective eddies, a flame is born in the center of a vigorous convection field (v_rms ~ 400 km/s) extending out to enclose ~70% of the WD’s mass (Zingale et al. 2009). We present preliminary results from a physically-motivated TFI model inspired by Colin et al. (2000) that utilizes a local, instantaneous measure of the turbulence to enhance the flame speed due to under-resolution. We explore various implementation choices in the TFI model and compare results to previous work. We present two simulations of the early flame evolution in a supernova. One incorporates a TFI model with particular implementation choices, while the other relies only on indirect buoyancy effects (Khokhlov 1995).

**Turbulence-Flame Interaction on the Early Evolution of Flames in Type Ia Supernovae**

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