Simulation and flow physics of a shocked and reshocked high-energy-density mixing layer

Movie captions

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Available at https://doi.org/10.1017/jfm.2020.1122. Published in 2021 in the *Journal of Fluid Mechanics*.

MOVIE 1: Evolution of the instantaneous $\mathbb{M}_H$ mass fraction Y_H in the $\mathbb{M}_H$–$\mathbb{M}_L$ mixing layer of the finest-resolution baseline simulation. The left frame depicts evolution of the three-dimensional field $Y_H(x, y, z)$ near the mixing-layer centre-plane $x = x_c$. Zones with $Y_H < 0.05$ are not shown. The right frame depicts evolution of the two-dimensional cross-section $Y_H(x_c, y, z)$.

MOVIE 2: In the left frame, evolution of the instantaneous $\mathbb{M}_H$ mass fraction Y_H in the $\mathbb{M}_H$–$\mathbb{M}_L$ mixing layer of the finest-resolution baseline simulation. The same contours shown in the left frame of movie 1 are reproduced here. In the right frame, evolution of the mixing-layer centre-plane coordinate x_c in the finest-resolution baseline simulation and the axial main-shock and reshock positions in a corresponding one-dimensional simulation.

MOVIE 3: Evolution of the base-10 logarithm of the local density-weighted turbulent kinetic energy $\rho\mathcal{I} = \frac{1}{2}\,\rho\, u_i'' u_i''$ at the mixing-layer centre-plane $x = x_c$ in the finest-resolution baseline simulation (Base) and the finest-resolution cold-Péclet-number variation (CPV).

MOVIE 4: Evolution of the base-10 logarithm of the density-weighted enstrophy $\rho\,\Omega = \frac{1}{2}\,\rho\,\omega_i\omega_i$ at the mixing-layer centre-plane $x = x_c$ in the finest-resolution baseline simulation (Base) and the finest-resolution cold-Péclet-number variation (CPV).

MOVIE 5: Evolution of the spanwise gradient inverse scale length of density ρ at the mixing-layer centre-plane $x = x_c$ in the finest-resolution baseline simulation (Base) and the finest-resolution cold-Péclet-number variation (CPV). The main paper defines the spanwise gradient squared magnitude operator $\mathcal{G}^2_{yz}$.

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