

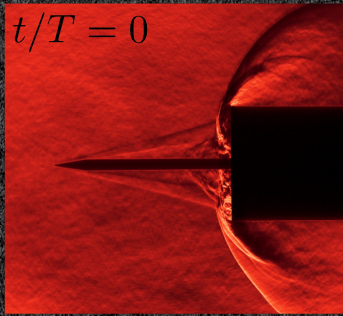
Piercing through air at high speed

Vaisakh Sasidharan and Subrahmanyam Duvvuri

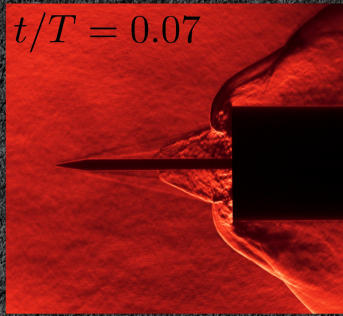
Turbulent Shear Flow Physics and Engineering Laboratory, Indian Institute of Science, Bengaluru 560 012, India



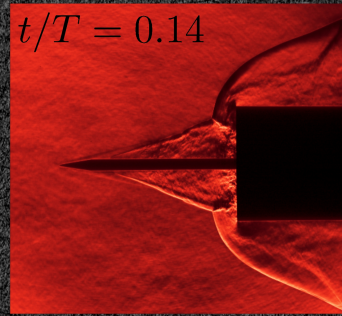
$t/T = 0$



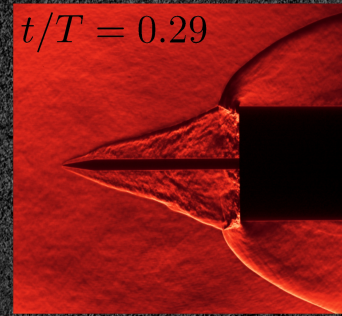
$t/T = 0.07$



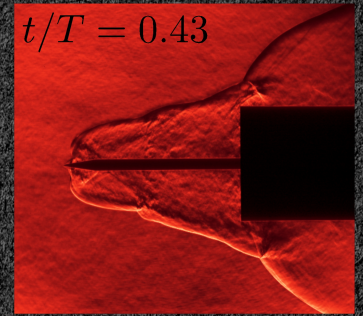
$t/T = 0.14$



$t/T = 0.29$

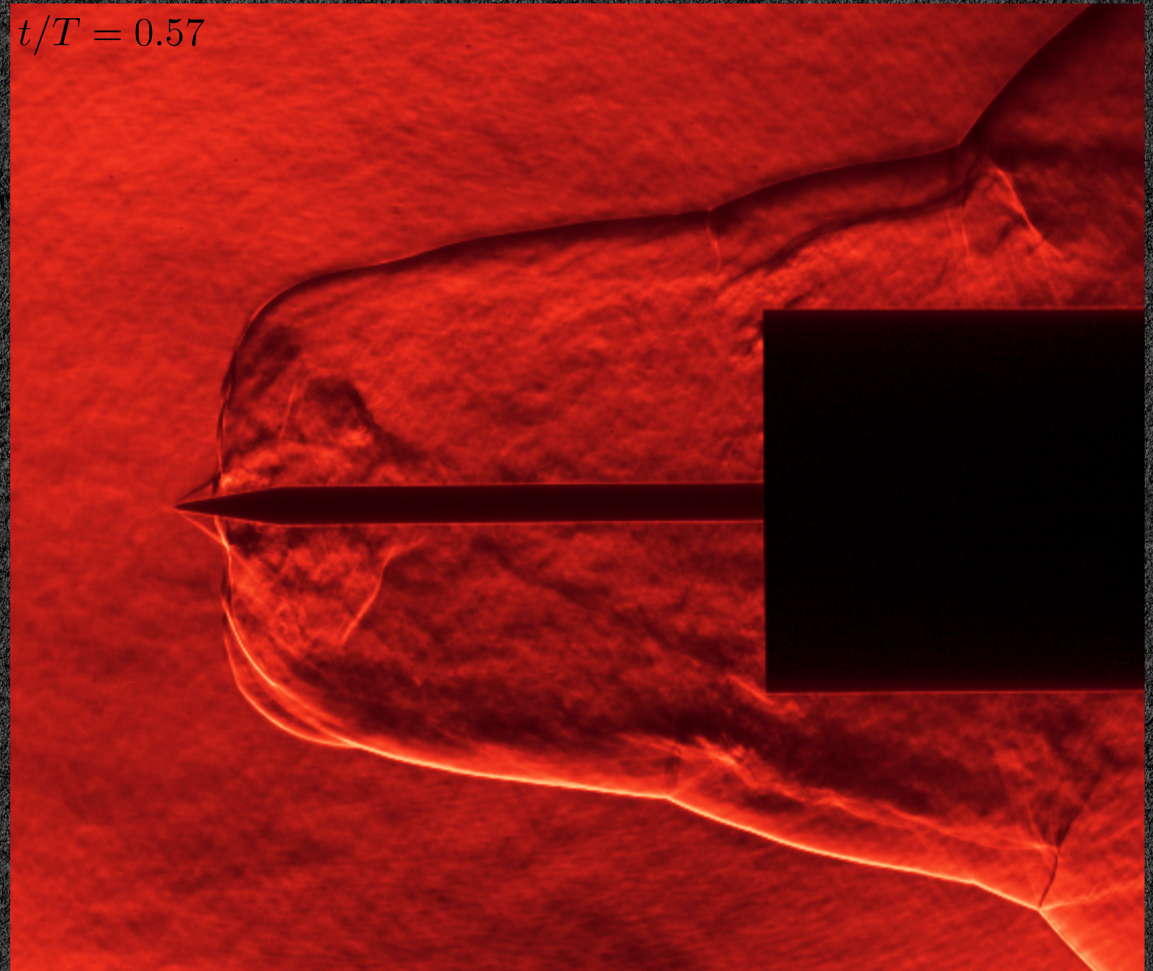


$t/T = 0.43$

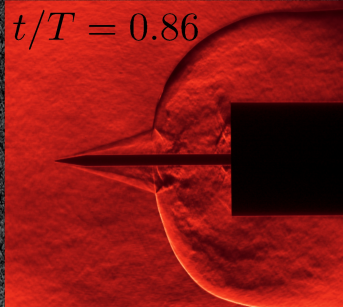


Aerodynamic objects with a slender fore-body and blunt aft-body configuration traveling at supersonic speeds can generate large-amplitude shock wave oscillations. This visually stunning phenomenon is caused by the interaction between shock waves and separated flow over the fore-body. This set of eight false-colored schlieren snapshots were experimentally obtained in a Mach 6 flow over an axisymmetric spike-cylinder over one oscillation time period T , which in this case corresponds to about 470 μ s. Here t denotes time; $t/T = 0$ (top left snapshot) indicates the beginning of an oscillation cycle.

$t/T = 0.57$



$t/T = 0.86$



$t/T = 0.64$

