

## Supplementary information: DSMC results for Gaussian density excitation

The six-part Figure 1 shows time snapshots at  $t = 0.5$  of the system response to Gaussian density excitation peaked at  $(x_G, y_G) = (0.25, 0.5)$  with  $\alpha = 80$ . The results are based on DSMC calculations at  $\text{Kn} = 5$  for isothermal- (Figs. 1a-1c) and specular- (Figs. 1d-1f) wall systems. In each case, two-dimensional colormaps are presented for the acoustic pressure, density perturbation and velocity magnitude fields. The results are in overall agreement with the counterpart findings in the case of an impulse signal, shown in the main text in Figs. 3b and 3d. In particular, the “source-type” characteristics of the density signal propagation (as opposed to the “sink-like” behaviour of the temperature source; cf. Figs. 3a and 3c in the main text) are visible.

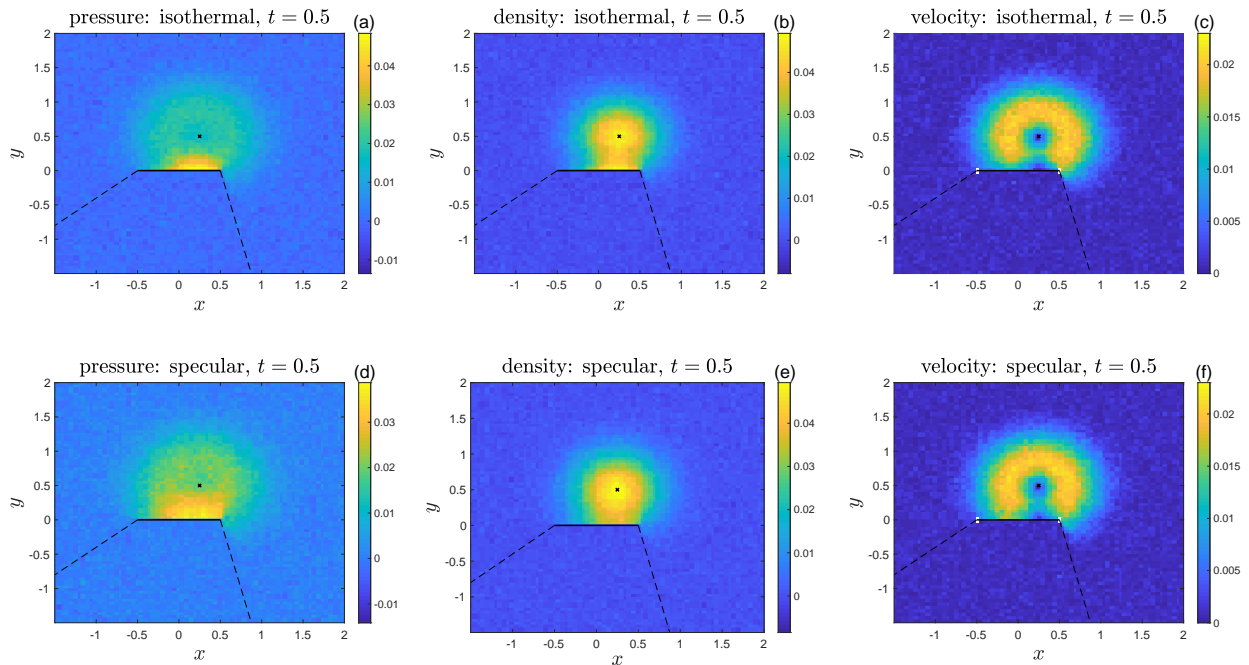


Figure 1: Time snapshots of the gas response to Gaussian density excitation with  $\alpha = 80$  peaked at  $(x_G, y_G) = (0.25, 0.5)$ : DSMC-calculated (a,d) acoustic pressure, (b,e) density perturbation and (c,f) velocity magnitude colormaps at time  $t = 0.5$  and  $\text{Kn} = 5$  for (a-c) isothermal- and (d-f) specular-wall systems. The Gaussian peak and plate locations are marked by a cross and a solid line in each figure, respectively. The dashed lines confine the plane zone obstructed by the plate in the free-molecular regime for a point source imposed at  $(x_\delta, y_\delta) = (0.25, 0.5)$ .