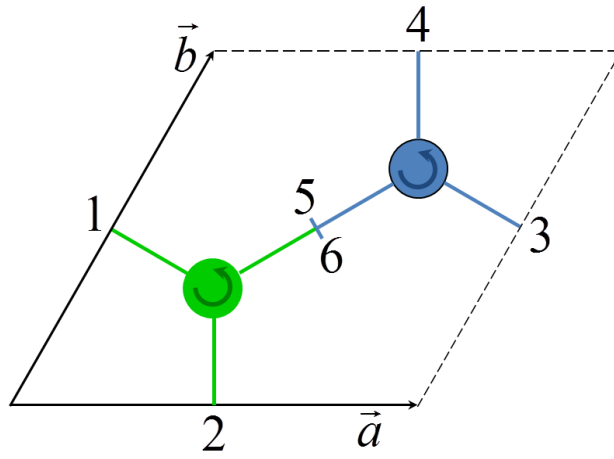
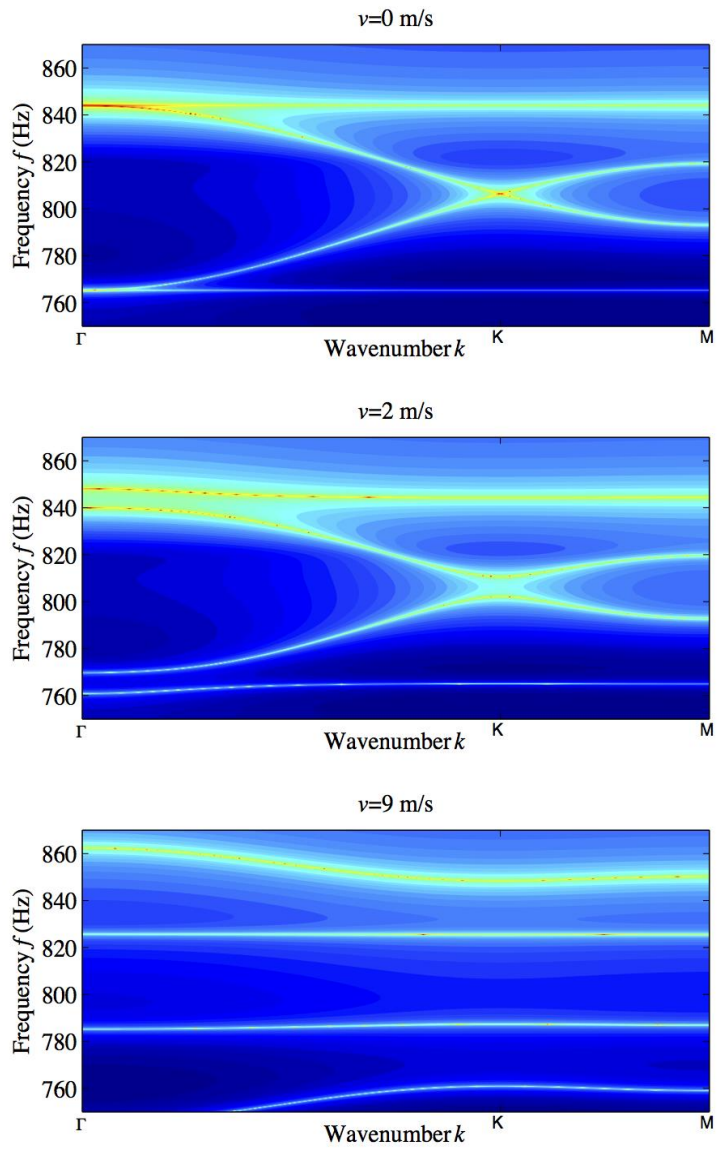


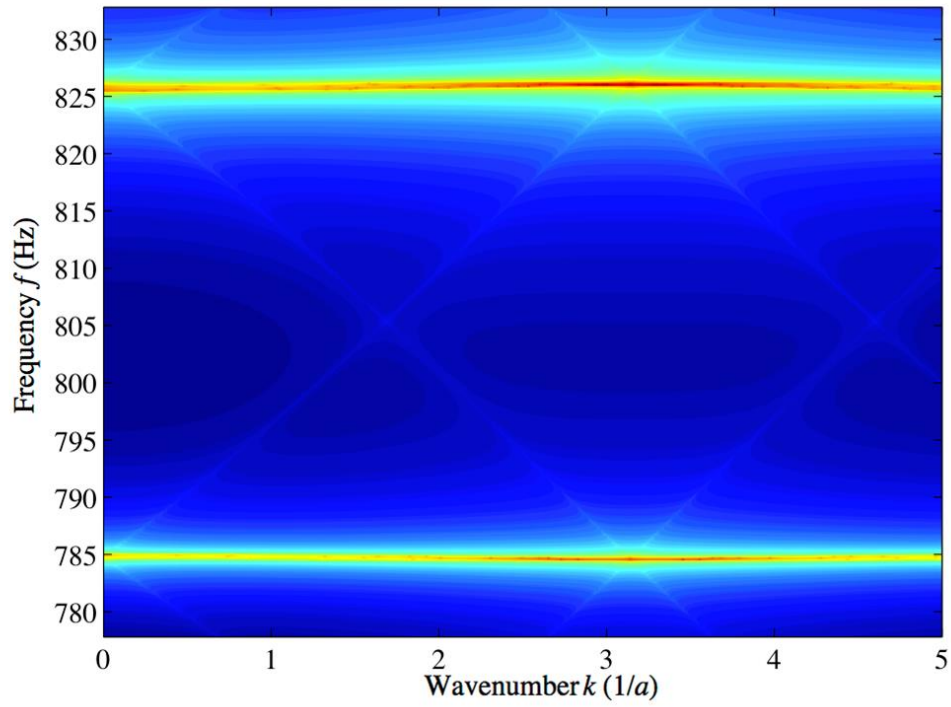
**Supplementary Figure 1 | Scattering parameters.** Magnitude of the scattering parameters versus frequency for a single lattice element, for different values of the Doppler bias.



**Supplementary Figure 2 | Unit cell of the lattice.** Unit cell schematics of the acoustic graphene, and port notations.



**Supplementary Figure 3| Bulk band structure based on the analytical model.** Analytical predictions for the bulk band structure for different values of the Doppler bias.



**Supplementary Figure 4| Supercell band structure based on the analytical model.** Analytically evaluated band structure for the supercell of 1 by 20 unit cells of acoustic graphene with the domain wall at the center. The velocity bias flips from  $v=9\text{m/s}$  to  $v=-9\text{m/s}$  along the domain wall.