

# The isentropic Euler system admits some plane wave superpositions

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A class of differentiable solutions is proved for the isentropic Euler equations in two and three space dimensions. The solutions are explicitly given in terms of solutions to inviscid Burgers equations, and several directions of propagation. The relative orientation of the directions is critical. Within the directional constraints, the Burgers solutions are arbitrary. The several velocities add, and the pressures combine nonlinearly. These solutions cannot exist beyond the time when shocks develop in any of the Burgers solutions.

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