

Abstract Submitted
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Shock Structure in a Supersonic Jet¹ CATALNA STERN, CESAR AGUILAR, UNAM — We visualize the stationary shock structure of a 1.6mm supersonic jet flow using a shadowgraph. The form and size of the structure can be determined. Through the heterodyne detection of Rayleigh scattering by the flow, we can obtain the instant spatial Fourier Transform for a given wave vector, of the density fluctuations in the flow. The wave vector is related to the size of the fluctuations and indicates their direction of propagation. The spectral density of these fluctuations shows two of the modes described by Monin and Yaglom: The entropic mode is related to entropy fluctuations at constant pressure, the acoustic mode is related to isentropic pressure fluctuations. Besides the two predicted peaks, another one appears close to the shocks, that moves at slow speed. We present preliminary results that show that this slow speed fluctuation appears always close and parallel to the shock. Research is still in progress to understand the dynamics in these regions of the flow.

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