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**Effect of jet temperature on jet noise: data and requirements for modeling**

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The modifications to the jet spectra caused by the heating of the jet have been the subject of experimental and theoretical research since the early 1970s. Early experimental data produced ambiguous and contradictory trends, which complicated the modeling efforts. Disparate theories have been proposed; however, no fundamental explanation or theory exists to date. First of all, a comprehensive experimental program has been carried out to establish the effect of temperature on jet noise. Detailed analyses indicate that in addition to the jet velocity ( $V_j/a$ ), the jet temperature ratio, either stagnation or static, is an independent controlling parameter. The spectral shape at the lower radiation angles (measured from the jet inlet) is universal and independent of the jet Mach number and temperature. In the aft directions, the spectral shape is controlled by the jet temperature ratio, regardless of the jet velocity. These recently established trends have not been incorporated in any existing theory. The modeling of the effects of jet temperature and the suitability of the proposed formulations in existing theories are examined; the need for fresh thinking and the requirements for a good model are highlighted.