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Statistical Comparison of Far-Field Noise Events in a Controlled Flow Ma=0.6 Jet GRAHAM FREEDLAND, JACQUES LEWALLE, Syracuse University — We compare distributions of acoustic events in controlled and uncontrolled high speed jets. By examining far-field acoustic signals from three microphones and using continuous wavelets, sources of noise can be identified through cross-correlation of the different far-field signals. From the events found, four properties (wavelet magnitude, Strouhal number and lags between two pairs of microphones) were tabulated. Each test gives over 10,000 events, which were sorted into histograms that approximate the statistical distributions of properties. This is used to determine what influence the addition of synthetic jet actuators has on the properties of the flow of the jet. A qualitative analysis of the distributions using quantile-quantile plots helps in the understanding of the distributions of sources. A quantitative analysis using the Anderson-Darling and Kolmogorov-Smirnov tests establishes statistically significant differences between the baseline and control cases.
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