Comparison of Methods for Identifying Noise Sources in Far-Field Acoustic Signals ANDREW TENNEY, JACQUES LEWALLE, Syracuse University — Three different methods of extracting intermittent wave packets from unstructured background within complex time series signals were analyzed and compared. The algorithms are denoted "cross correlation," "denoising," and "TFLE (Time-Frequency-Lag event)" methods respectively. All three methods utilize Mexican Hat or Morlet wavelets for the transformation of time domain signals into time-frequency domain signals. Within the denoising and cross correlation algorithms, events are identified through comparison of high energy excerpts of each signal captured by individual far-field microphones, while the TFLE algorithm simply defines events by their contributions to positive correlation values. The goal of this analysis is to quantify the advantages and disadvantages of each of these methods. The results lend themselves to determining the validity of these methods as noise source identification algorithms to be used in jet noise characterization. This work is supported in part by Spectral Energies LLC, under an SBIR grant from AFRL; and by the Department of Mechanical and Aerospace Engineering REU Program at SU.

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