The Graduate Program in Acoustics announces the
Thesis Defense of
Andrew Merck, M S Candidate
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9:30 AM
Hammond Building
Room 218 (Enter Room 213 to get to room)

THE DEVELOPMENT OF A FAST METHOD FOR THE CALCULATION OF NOISE FROM SUPersonic Jets

ABSTRACT

The development of a high-speed jet noise prediction method that is significantly less computationally expensive and which provides a simple user interface is described. Several sets of far-field spectral density experimental data are decomposed into their large-scale turbulence component and the corresponding near-field wavenumber spectra are calculated. A wavepacket model is used to characterize the near-field wavenumber spectrum at the surface of the jet flow, and the wavepacket properties given by the near-field spectra at various frequencies and operating conditions are found using Gaussian fits. A large database is compiled from the wavepacket properties for a range of operating conditions, and the far-field jet noise is predicted using a mathematical model that combines the wavepacket model and existing models. Comparison of the wavepacket-model far-field supersonic jet noise predictions and experimental measurements are made, and the results demonstrate that the wavepacket-model results in accurate noise predictions.

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