

Abstract Submitted  
for the DFD13 Meeting of  
The American Physical Society

**Heater Applications for High Speed Jets** JACK ROSSETTI, Buffalo, ZACHARY BERGER, MATTHEW BERRY, Syracuse, ANDRE HALL, Pratt & Whitney, MARK GLAUSER, Syracuse — In this investigation, we study a high speed jet flow for noise reduction techniques. Here we specifically examine a heated jet for practical jet noise applications. Experiments are conducted in the Syracuse University anechoic chamber at the Skytop campus. This 206 m<sup>3</sup> facility is lined with fiberglass wedges having a cutoff frequency of 150 Hz. Far-field microphones and near-field pressure sensors measure the acoustics and hydrodynamics, respectively. A 470 kW Chromalox heating unit is used to heat the flow to 1000°F at the nozzle exit. The controller for the heating unit has an associated time lag based on the Mach number and temperature. Therefore, this study will primarily focus on the heat transfer between the heating elements and the nozzle flow. Optimization of the heater's controller will allow for sufficient run time for data acquisition capabilities. Previous investigations at Syracuse University indicate significant differences between heated and cold jets, with regards to the acoustics and potential core characteristics (Hall et al. 2009).

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Date submitted: 01 Aug 2013

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