

**ACOUSTICS2008/1264**  
**Simulation of Jets Exhausting from Chevron Nozzles and Their Noise**

Ali Uzun

Florida State University, School of Computational Science, 400 Dirac Science Library, Tallahassee, FL  
32306, USA

Environmental concerns and strict noise regulations around major airports have made jet noise a crucial problem in present day aeroacoustics research, as it is the jet engine exhaust that is responsible for much of the noise generation during aircraft takeoff. Chevron nozzles have drawn a lot of attention recently due to their noise reduction benefits. Chevrons typically reduce low frequency noise at aft angles while providing an increase in high frequency noise at broadside angles relative to the jet. The streamwise vorticity generated by the chevrons affects the jet shear layer mixing and thus is responsible for the decrease or increase in noise over certain frequency ranges. The ultimate goal in chevron design is to decrease low frequency noise as much as possible while preventing the increase in high frequency noise. In our research, we are performing high-fidelity numerical simulations of jets exhausting from chevron nozzles to gain a better understanding of chevron jet shear layer mixing. These simulations employ a large eddy simulation tool utilizing state-of-the-art numerical techniques. In this talk, representative results from our research will be presented and an assessment of our current prediction capability of chevron jet noise will be provided.