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Toward forced-wavepacket jet-noise models AARON TOWNE, Center for Turbulence Research, Stanford University, SANJIVA K. LELE, Stanford University, GUILLAUME A. BRES, Cascade Technologies — Large-scale hydrodynamic wavepackets have been identified by numerous studies as an important source of turbulent jet noise. Linear models have proven capable of predicting the average statistics of these wavepackets but severely under-predict the associated acoustic radiation in subsonic jets in particular. Further studies have suggested that this under-prediction can be attributed to the sensitivity of the far-field noise to second order statistics of the wavepackets that are not properly reproduced by fully linear models. One approach to incorporating nonlinear effects is the computation of so-called resolvent modes, which represent the linear response of the flow to a nonlinear forcing that is presumed to be temporally and spatially uncorrelated, i.e., white noise. This approach has delivered promising results (see for example Jeun et al., *Phys. Fluids* 2016), but its quantitative accuracy is limited by its implicit white-noise assumption. In this talk, we will show how correlated forcing can be systematically incorporated into a resolvent-based model and demonstrate the effect of applying modeled forcing that is designed to mimic the actual nonlinear terms present in a Mach 0.9 turbulent jet.

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