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**The coupling of high-speed high resolution experimental data and LES through data assimilation techniques** S. HARRIS[1], J.W. LABAHN[2], Stanford University, J.H. FRANK[3], Sandia National Laboratories, M. IHME[4], Stanford University — Data assimilation techniques can be integrated with time-resolved numerical simulations to improve predictions of transient phenomena. In this study, optimal interpolation and nudging are employed for assimilating high-speed high-resolution measurements obtained for an inert jet into high-fidelity large-eddy simulations. This experimental data set was chosen as it provides both high spacial and temporal resolution for the three-component velocity field in the shear layer of the jet. Our first objective is to investigate the impact that data assimilation has on the resulting flow field for this inert jet. This is accomplished by determining the region influenced by the data assimilation and corresponding effect on the instantaneous flow structures. The second objective is to determine optimal weightings for two data assimilation techniques. The third objective is to investigate how the frequency at which the data is assimilated affects the overall predictions.

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