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Practical Considerations for Simultaneous LDV & PIV Measurements STAMATIOS POTHOS, AARON BOOMSMA, DAN TROOLIN, TSI Inc — Simultaneous LDV and PIV measurements are useful for validation experiments and when correlating high temporal resolution measurements with large structures of the flow. Performing simultaneous LDV and PIV measurements can be a challenging task due to the differences in temporal and spatial resolution of each technique, as well as requirements for adequate signal. Even so, simultaneous hot-wire and PIV measurements is even more difficult. Unlike hot-wire, LDV is a non-intrusive technique that is unaffected by PIV laser light-sheet heating. Furthermore, hot-wire measurements are adversely affected by seeding particles in the flow required for PIV. In the present study, we discuss several practical considerations for performing simultaneous LDV and PIV measurements. We completed two separate experiments, each with different seeding densities, flow velocities, and working fluids. With these data sets, we studied the effects of temporal and spatial interpolation, up/down sampling, PIV window size and overlap on the simultaneous signals.

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