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Real-time PIV for Active Flow Control Applications[1] MATTHEW MUNSON, California Institute of Technology, CHRISTIAN WILLERT, German Aerospace Center (DLR), MORTEZA GHARIB, California Institute of Technology
— In pursuit of closed-loop control of vortex formation and separation processes on low-Reynolds number wings, a "real-time" particle image velocimetry system has been developed for use in the low Reynolds number oil tunnel facility at the California Institute of Technology. The use of oil as the working fluid provides slow enough dynamics that the typical latencies inherent to the PIV technique remain manageable. This system allows control decisions to be computed directly from a quantitative evaluation of features in the flow field. The performance of the system will be discussed, along with preliminary efforts toward regulation of vortex shedding processes in the wake of a low-aspect ratio rectangular wing.

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