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The Effect of Upstream Vane Wakes on Annular Diffuser Flows ERICA CHERRY, ANGELINA PADILLA, CHRISTOPHER ELKINS, JOHN EATON, Stanford University — Experiments were performed to determine the sensitivity to inlet conditions of the flow in two annular diffusers. One of the diffusers was a conservative design typical of a diffuser directly upstream of the combustor in a jet engine. The other had the same length and inlet shape as the first diffuser but a larger area ratio and was meant to operate on the verge of separation. Each diffuser was connected to two different inlets, one containing a fully-developed channel flow, the other containing wakes from a row of airfoils. Three-component velocity measurements were taken on the flow in each inlet/diffuser combination using Magnetic Resonance Velocimetry. Results will be presented on the 3D velocity fields in the two diffusers and the effect of the airfoil wakes on separation and secondary flows.

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