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Asymmetric Separation and Perturbation Sensitivity in an Annular Diffuser JESSE COFFMAN, SCOTT MORRIS, ALEKSANDER JEMCOV, JOSHUA CAMERON, University of Notre Dame — When an annular diffuser stalls, the separation can take many forms. Experiments show that one type of separation appears to be asymmetric and periodic. This asymmetry appears to be influenced by upstream and downstream components and inlet flow conditions. By understanding the changes effected at the exit of the diffuser by the inlet perturbations, the diffuser performance can be more accurately predicted within a system. This work aims to understand the influence of velocity perturbations at the inlet of the diffuser on the overall duct performance. This is done by application of the Euler equations and a RANS simulation for various circumferential wavenumbers.

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