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The Impact of Casing Geometry on a High Speed Compressor Rotor Passage Shock MARK ROSS, University of Notre Dame, HAIXIN CHEN, Tsinghua University, JOSHUA CAMERON, SCOTT MORRIS, University of Notre Dame — The adiabatic efficiency of a high speed compressor is inextricably linked with the strength and structure of the rotor passage shock. It is well known that the geometry of the compressor casing can affect the topology of the rotor passage flow field as well as the strength and location of the rotor passage shock. However, partially due to the complexities of this unsteady, swirling, and compressible flow, the community lacks a physics-based understanding of this phenomenon. As a first step in gaining insight into this problem, single-passage RANS simulations of Notre Dame's Stage 04 rotor with four different casing geometries were conducted. The presentation will examine changes in the topology of the rotor passage flow occurring with changes in the casing boundary condition.

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