

Abstract Submitted  
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**3D diffuser flow predictions using lag models.**<sup>1</sup> RAJARSHI BISWAS, Iowa State University, PAUL DURBIN, Professor, Iowa State University — Lag RANS models employ the usage of a scalar parameter designed to represent the stress-strain misalignment in turbulent flows. The parameter is used to scale the eddy viscosity particularly in the near-wall region. This proves effective for improved prediction of 2D flows with separation. Two novel models, Lag k-epsilon and Lag k-omega are tested for a 3D diffuser configuration. The geometry is parameterized by the inlet aspect ratio(AR). LES predictions show the separation bubble switches position from one wall to the other as AR is increased. Typical RANS formulations such as k-omega SST predict the flow field inaccurately. The lag models are tested for six different ARs and compared against commonly used RANS models.

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