

Abstract Submitted  
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**The Oriented-Eddy Collision Model**<sup>1</sup> MICHAEL B. MARTELL, J. BLAIR PEROT, University of Massachusetts Amherst — A novel method of treating turbulence - as a collection of interacting fluid particles (eddies) which have inherent orientation - is employed to capture fast pressure-strain in rapid distortion as well as other canonical turbulent flows. The Oriented-Eddy Collision (OEC) model is cast in the form of a collection of Reynolds-stress transport models. Underlying this approach is a unique PDF collision model. The model returns unsteady-RANS-like results, contains no special provisions to satisfy realizability, and maintains both frame and coordinate invariance. Simple wall-bounded flows, such as pressure driven channel flow, are captured without the use of wall-functions. Although more expensive than standard RST models, the model's accuracy and cost fall between those of RST and LES.

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