

Abstract Submitted
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Computational and Experimental Investigations of Turbulent Flow Past Projectiles¹ IGBAL MEHMEDAGIC, PASQUALE CARLUCCI, DONALD CARLUCCI, U. S. Army ARDEC, SIVA THANGAM, Stevens Institute of Technology — Experimental and computational investigations of turbulent flow past projectiles is modeled as axial flow past a cylinder with a free-spinning base. A subsonic wind tunnel with a forward-sting mounted spinning cylinder is used for experiments. In addition, a free-jet facility is used for benchmarking the experimental set up. Experiments are performed for a range of spin rates and free stream flow conditions. An anisotropic two-equation Reynolds-stress model that incorporates the effect of rotation-modified energy spectrum and swirl is used to perform computations for the flow past axially rotating cylinders. Both rigid cylinders as well as that of cylinders with free-spinning base are considered from a computational point of view. Applications involving the design of projectiles are discussed.

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