

Abstract Submitted  
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**A Modified Consistent Splitting Scheme for Convective-Like Energy-Stable Open Boundary Conditions for Simulating Incompressible Outflows**<sup>1</sup> SRI HARSHA CHALLA, SUCHUAN DONG, Purdue University

— We present a modified consistent splitting type scheme together with the recently-developed convective-like energy-stable open boundary condition for incompressible outflow simulations. The key distinction of the scheme is an algorithmic reformulation of the viscous term, which enables the simulation of outflow problems on severely-truncated flow domains at moderate to high Reynolds numbers. In contrast, it is observed that the standard consistent-splitting scheme exhibits a numerical instability even at fairly low Reynolds numbers (e.g. several hundred), and this numerical instability is in addition to the backflow instability commonly known to be associated with strong vortices or backflows at the outflow boundary. Extensive numerical experiments will be presented for a range of Reynolds numbers to demonstrate the effectiveness and accuracy of the presented method for this class of flows.

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