

Abstract Submitted
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Vortex pair interaction and cavitation inception¹ ADITYA MADABHUSHI, KRISHNAN MAHESH, University of Minnesota — Cavitation inception during vortex pair interaction is a common phenomenon observed in turbulent flows. Here, DNS is used to study the interaction between a counter rotating unequal strength vortex pair at $Re = 200000$. The entire evolution, beginning with the Crow instability during initial stages to non-linear dynamics at the later stages leading to inception, is studied. Velocity gradient invariants are used to characterize the topology and core dynamics. The factors that could potentially lead to inception in either of the vortices are discussed. A fully compressible Euler-Lagrangian model is being developed that would accurately predict the dynamics of the sub-grid bubbles during inception. The model will be discussed.

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