

Abstract Submitted
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Influence of Vortex Cavitation on Vortex Breakdown HARISH GANESH, ANDRE PINHEIRO, University of Michigan, Ann Arbor, BU GUEN PAIK, Maritime & Ocean Engineering Research Institute/KORDI, Daejeon, Korea, STEVEN L. CECCIO, University of Michigan, Ann Arbor — Cavitation inception and development was observed in the vortices created by an $\Lambda = 70^\circ$ delta wing over a range of attack angles and cavitation numbers. The location of cavitation inception, bubble size, growth rate, and the effect of cavitation on the location of vortex breakdown were studied. From the observations a rationale that governs the observed inception location, growth of incepted nucleus into a given shape is proposed. It is based on the alterations of the vortical core flow that an elongating bubble will cause. The minimizing potential theory of *Rusak et al*¹ is used to identify the constraints on the bubble growth which in turn helps us to understand the bubble shape and growth rate.

¹“The evolution of a perturbed vortex in a pipe to axisymmetric vortex breakdown,” Rusak, Z., Wang. S., Whiting. C. H., *Journal of fluid mechanics*, 1998, Vol 336, pp 211-237

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