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Cavitation Experiments and Numerical Simulations in Aviation Fuel. IRINA DOROFEEVA, MICHAEL DAVIS, FLINT THOMAS, University of Notre Dame — Cavitation is a persistent problem in internal flows due to both performance reduction associated with the introduction of fluid compressibility and component surface damage associated with regions of bubble collapse. The work reported here is focused on understanding cavitation in JP8 aviation fuel and how it differs in character from the more commonly studied cavitation in water. Two flow field geometries are considered. One involves a planar converging-diverging nozzle and the other radial gap flow between circular disks. In both geometries cavitation of water and JP8 occurs but the imposed strain rates are much higher in the disk experiment. We contrast the cavitation of water and JP8 in both geometries and attempt to explain essential differences through numerical modeling.

> Irina Dorofeeva University of Notre Dame

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