

Abstract Submitted
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Investigation of cavitating flows by X-ray and optical imaging
OLIVIER COUTIER-DELGOSHA¹, SYLVIE FUZIER², ILYASS KHLIFA³, Arts et Metiers ParisTech / LML laboratory, KAMEL FEZZAA, APS - Argonne National Laboratory — Hydrodynamic cavitation is the partial vaporization of high speed liquid flows. The turbulent, compressible and unsteady character of these flows makes their study unusually complex and challenging. Instabilities generated by the occurrence of cavitation have been investigated in the last years in the LML laboratory by various non-intrusive measurements including X-ray imaging (to obtain the fields of void fraction and velocity in both phases), and PIV with fluorescent particles (to obtain the velocity fields in both phases). It has been shown that cavitation is characterized by significant slip velocities between liquid and vapor, especially in the re-entrant jet area and the cavity wake. This results suggests some possible improvements in the numerical models currently used for CFD of cavitating flows.

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