

Abstract Submitted
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Velocimetry in cavitating flows by X-ray imaging OLIVIER COUTIER-DELGOSHA, LML Laboratory / Arts et Metiers ParisTech, MARKO HOCEVAR, Laboratory for Water and Turbine Machines, Faculty of Mechanical Engineering, University of Ljubljana, ILYASS KHLIFA, Arts et Metiers ParisTech / LML Laboratory, SYLVIE FUZIER, Arts et Metiers ParisTech / LML Laboratory, ALEXANDRE VABRE, CEA LIST, KAMEL FEZZAA, WAH-KEAT LEE, X-ray Science Division, Argonne National Laboratory, LABORATORY FOR WATER AND TURBINE MACHINES, FACULTY OF MECHANICAL ENGINEERING, UNIVERSITY OF LJUBLJAN COLLABORATION, CEA LIST COLLABORATION, X-RAY SCIENCE DIVISION, ARGONNE NATIONAL LABORATORY COLLABORATION — A promising method to measure velocity fields in a cavitating flow is presented. Dynamics of the liquid phase and of the bubbles are both investigated. The measurements are based on ultra fast X-ray imaging performed at the APS (Advanced Photon Source) of the Argonne National Laboratory. The experimental device consists of a millimetric Venturi test section associated with a transportable hydraulic loop. Various configurations of velocity, pressure, and temperature have been investigated. The slip velocity between vapor and liquid is calculated everywhere both velocities can be obtained. Reynolds stresses are also calculated, and compared with the ones obtained in non-cavitating conditions.

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