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Atomization in an Air-Water Pipe Flow¹ SYLVAIN BOULESTEIX, PATRICIA ERN, FRANCOIS CHARRU, Institut de Mecanique des Fluides de Toulouse - France — The atomization process at the interface of a liquid layer sheared by a high-velocity gas flow plays a crucial role in mass and momentum transfer between phases. The knowledge of the characteristics of entrained droplets is a first step towards a better understanding of this phenomenon. We have therefore investigated these characteristics for a horizontal air-water pipe flow using a high-speed camera. This revealed that primary atomization mostly occurs through two mechanisms: bag and ligament breakups, like in the case of a single drop or of a liquid jet sheared by a high-velocity gas stream. We also observed that secondary atomization due to collisions between drops is a frequent phenomenon that may have a greater importance in the reduction of droplets sizes than previously considered in the litterature. Finally, digital image processing allowed us to measure the probability density functions of droplets sizes and velocities, which will be discussed here.

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Prefer Oral Session
 Prefer Poster Session

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