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Determination of the diffusion coefficient in a bubble suspension for large but finite Reynolds numbers RODOLFO ALCALA, ALICIA AGUILAR, Universidad Michoacana de San Nicolas de Hidalgo, ROBERTO ZENIT, BERNARDO FIGUEROA, Universidad Nacional Autonoma de Mexico, JESUS CORREA, Universidad Michoacana de San Nicolas de Hidalgo — This paper presents experimental results concerning the study of a bubble suspension confined in a thin channel for different volume fractions of gas, in a regime characterized by Reynolds numbers of order 10^2 - 10^3. The experimental set-up consists in a Hele-Shaw cell thin channel, a high speed camera, a diffused backlight system and a rotameter to control the flow of Nitrogen into the system. A trajectography technique is used to obtain the flow properties from series of digital images captured by the high speed camera. The trajectories and velocities of the bubbles were calculated from the instantaneous bubbles positions. With these measurements, the diffusion coefficients for different gas fractions were determined using the method of the autocorrelation function.

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