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Linear Instability Analysis of non-uniform Bubbly Mixing layer with Two-Fluid model. SUBASH SHARMA, KRISHNA CHETTY, MARTIN LOPEZ DE BERTODANO, School of Nuclear Engineering, Purdue University, 400 Central Drive, West Lafayette, IN 47907-2017, USA — We examine the inviscid instability of a non-uniform adiabatic bubbly shear layer with a Two-Fluid model. The Two-Fluid model is made well-posed with the closure relations for interfacial forces (Bertodano et al. 2016). First, a characteristic analysis is carried out to study the well posedness of the model over range of void fraction with interfacial forces for virtual mass, interfacial drag, interfacial pressure. A dispersion analysis then allow us to obtain growth rate and wavelength. Then, the well-posed two-fluid model is solved using CFD to validate the results obtained with the linear stability analysis. The effect of the void fraction and the distribution profile on stability is analyzed.

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