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**The effect of bubbles on flow structure and heat transfer in laminar boundary layers** VLADIMIR AJAEV, Southern Methodist University, DAVID BRUTIN, LOUNES TADRIST, Universite de Provence - Ecole Polytechnique Universitaire de Marseille/CNRS, France — We develop a mathematical model of the effect of a vapor or gas bubble trapped between liquid and a flat plate on the laminar boundary-layer-type flow in the liquid. For very thin bubbles the effect amounts to simple modification of the no-slip condition, but as the bubble height increases, there are significant changes in the structure of the boundary layer formed behind the bubble. We investigate how these changes affect the heat transfer in the boundary layer. The model is used to explain some recent surprising experimental findings showing an increase of the wall heat transfer coefficient during boiling under the microgravity conditions compared to its value under normal gravity.

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