

Abstract Submitted  
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**Stability of a two-layer binary fluid system with diffuse interface<sup>1</sup>**

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University — The phase separation of a binary fluid can lead to creation of two  
horizontal fluid layers with different concentrations resting on a solid substrate and  
divided by a diffuse interface. In the framework of the Cahn-Hilliard equation,  
it is shown analytically and numerically that such a layered system is subject to a  
transverse instability that generates a slowly coarsening multidomain structure. The  
influence of gravity, solutocapillary effect at the free boundary and Korteweg stresses  
inside the diffuse interface on the stability is studied using the coupled system of  
the hydrodynamic equations and the nonlinear equation for the concentration (H-  
model). Parameter regions of long-wave instabilities are found.

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