# Shielding instability of bubble chain

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Dynamic behaviour of hydrodynamically interacting particles at intermediate Reynolds number is far from being understood. A relatively simple example is one-dimensional array of bubbles rising through a quiescent liquid (bubble chain, bubble trail, bubble line). This problem is doable when employing a simple force-law model approach. Then, the set of the governing equations can be investigated. An important issue is the stability of such arrays: when the particles are slightly displaced from their equilibrium positions of uniform spacing, will they return or will the disturbances grow? The present contribution addresses the stability analysis of a bubble chain. It is found that source of instability is related to the shielding force, which expresses the drag dependence of a bubble on the distance from the preceding bubble. This kind of instability is rather new, analyse in a great detail for the first time.

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