

SCIENTIFIC REPORTS

OPEN

Corrigendum: The Inhibition of the Rayleigh-Taylor Instability by Rotation

Kyle A. Baldwin, Matthew M. Scase & Richard J. A. Hill

Scientific Reports 5:11706; doi: 10.1038/srep11706; published online 01 July 2015; updated on 31 May 2016

The authors of this Article would like to clarify a point regarding the experimental technique described in the Results section. This clarification does not affect the findings and results of this study.

“Equivalently, we can consider that the force results from a change in the effective density ρ^* of the liquid in the magnetic field. In this picture the net vertical body force per unit volume is given by $F_z = -\rho^*g$, where $\rho^* = \rho - \frac{\chi}{g\mu_0}B\frac{\partial B}{\partial z}$, and the effective Atwood number is then simply defined as $\mathcal{A}^* = (\rho_1^* - \rho_2^*)/(\rho_1^* + \rho_2^*)$, where ρ_1^* is the effective density of the upper fluid layer, and ρ_2^* is the effective density of the lower fluid layer. In manipulating the relative magnitudes of the effective densities, the equilibrium profile is unaffected, and the RTI is initiated from hydrostatic conditions”.

should read:

“Equivalently, we can consider that the force results from a change in the effective weight of the liquid in the magnetic field. In this picture the net vertical body force per unit volume is given by $F_z = -(\rho g)^*$, where $(\rho g)^* = \rho g - \frac{\chi}{\mu_0}B\frac{\partial B}{\partial z}$, and the effective Atwood number is then simply defined as $\mathcal{A}^* = [(\rho g)_1^* - (\rho g)_2^*]/[(\rho g)_1^* + (\rho g)_2^*]$, where $(\rho g)_1^*$ is the effective weight of a unit volume of fluid in the upper layer, and $(\rho g)_2^*$ is the effective weight of a unit volume of fluid in the lower layer. In manipulating the relative magnitudes of the effective weights magnetically, the equilibrium profile changes continuously from ‘concave’ to ‘convex’ as it passes through $\mathcal{A}^* = 0$, allowing for the instability to be turned on smoothly via the magnetic field, and to develop from approximately hydrostatic conditions”.



This work is licensed under a Creative Commons Attribution 4.0 International License. The images or other third party material in this article are included in the article’s Creative Commons license, unless indicated otherwise in the credit line; if the material is not included under the Creative Commons license, users will need to obtain permission from the license holder to reproduce the material. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>