

Abstract Submitted
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On the atmosphere of a moving body¹ JOHAN ROENBY, Center for Fluid Dynamics and Department of Mathematics, Technical University of Denmark, HASSAN AREF², Center for Fluid Dynamics and Department of Physics, Technical University of Denmark — We have explored whether a rigid body moving freely with no circulation around it in a two-dimensional ideal fluid can carry a fluid “atmosphere” with it in its motion. Somewhat surprisingly, the answer appears to be “yes”. When the body is elongated and the motion is dominated by rotation, we demonstrate numerically that, indeed, regions of fluid follow the body in its motion. Since there is a double-island structure for the case of pure rotation, as already found by Morton and Darwin many years ago, we see the existence of an atmosphere for the moving body as an example of the stability of Kolmogorov-Arnold-Moser tori. Our observations were reported in *Physics of Fluids* **22** (2010) 057103. The presentation will include animations not published with the paper and some indications of further work.

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