

Abstract Submitted  
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**A paradox of hovering insects in two-dimensional space**<sup>1</sup> MAKOTO IIMA, Hokkaido University — A paradox concerning the flight of insects in two-dimensional space is identified: insects maintaining their bodies in a particular position (hovering) cannot, on average, generate hydrodynamic force if the induced flow is temporally periodic and converges to rest at infinity. This paradox is derived by using the far-field representation of periodic flow and the generalized Blasius formula, an exact formula for a force that acts on a moving body, based on the incompressible Navier-Stokes equations. This paradox provides insight into the effect of the singular behavior of the flow around hovering insects: the far-field wake covers the whole space.

Reference:

M. Iima, *J. Fluid Mech.*, (2008), **617**, 207–229.

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