

Abstract Submitted
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Drag induced lift in granular media YANG DING, NICK GRAVISH, DANIEL GOLDMAN, School of Physics, Georgia Institute of Technology, USA — Laboratory experiments and numerical simulation reveal that a submerged intruder dragged horizontally at constant velocity within a granular medium can experience a vertical force, whose sign and magnitude depend on the shape of the intruder and the depth. Simulations show that the lift as well as drag are generated mainly by interaction with the leading surface. Comparing the stress on flat plates with different inclination angles with the surface stresses on the intruders indicates that shape dependent drag and lift can be understood as the sum of the contributions from differential (flat plate) elements. A model similar to Coulomb's wedge method is developed to describe the forces experienced by the flat plates.

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