

Abstract Submitted
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Magnetic Levitation Experiments with the Electrodynamic Wheel¹ VINCENT CORDREY, ANGEL GUTARRA-LEON, NATHAN GAUL, WALERIAN MAJEWSKI, Northern VA Comm College — Our experiments explored inductive magnetic levitation using circular Halbach arrays with the strong variable magnetic field on the outer rim of the ring. Such a system is usually called an Electrodynamic Wheel (EDW). Rotating this wheel around a horizontal axis above a flat conducting surface should induce eddy currents in said surface through the variable magnetic flux. The eddy currents produce, in turn, their own magnetic fields which interact with the magnets of the EDW. We constructed two Electrodynamic Wheels with different diameters and demonstrated that the magnetic interactions produce both lift and drag forces on the EDW which can be used for levitation and propulsion of the EDW. The focus of our experiments is the direct measurement of lift and drag forces to compare with theoretical models using wheels of two different radii.

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