

Abstract Submitted
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Experiments on Levitation with the Electrodynamic Wheel ANGEL GUTARRA-LEON, George Mason Univ, VINCENT CORDREY , WALERIAN MAJEWSKI, Northern Virginia Community College — Our Experiments explored inductive magnetic levitation (MagLev) and the possibility of using simple permanent magnets and conductive tracks instead of coils for MagLev applications. Our investigations used a circular Halbach array 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 a four inch diameter Electrodynamic Wheel using twelve Neodymium permanent magnets and demonstrated that the magnetic interactions produce both lift and drag forces on the EDW which can be used for levitation propulsion of the EDW. The focus of our experiments is the direct measurement of lift and drag forces to compare with theoretical models to demonstrate magnetic levitation without the need for coils and complex control circuitry.

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