3D Finite Element Analysis of Yoke Hybrid Electromagnet

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Abstract : The objective of this paper is to analyze a 4-pole hybrid magnetic levitation system by using 3D finite element and analytical methods. The magnetostatic analysis of the system is carried out by using ANSYS MAXWELL-3D package. An analytical model is derived by magnetic equivalent circuit (MEC) method. The purpose of magnetostatic analysis is to determine the characteristics of attractive force and rotational torques by the change of air gap clearances, inclination angles and current excitations. The comparison between 3D finite element analysis and analytical results are presented at the rest of the paper.