ANALYSIS OF MAGNETIC CIRCUIT FOR AN ACTUATOR ELECTROMAGNETIC

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ABSTRACT

THE MAIN PURPOSE OF THIS DISSERTATION IS TO ANALYZE ELECTROMAGNET- IC FIELD PROBLEMS BY USING FINITE ELEMENT METHOD. A GOVERNING EQUATION OF ELECTROMAGNETIC FIELD PROBLEMS IS DERIVED FROM MAXWELL'S EQUATIONS. FURTHER MORE, A LARGE COEFFICIENT MATRIX IS DERIVED FROM APPLYING FINITE ELEMENT METHOD IN ORDER TO GET THE VECTOR MAGNETIC POTENTIAL. IN ORDER TO ADEQUATELY UNDERSTAND THE FINITE ELEMENT METHOD, A COMMERCIAL SOFTWARE ANSOFT IS EMPLOYED. SOLUTION TECHNIQUES AND PROCEDURES ARE DESCRIBED. ANALYTIC SUBJECT IS TAKEN FROM THE ELECTROMA- GNET OF MAGNETIC LEVITATION SYSTEM TO ANALYZE THE CHARACTERISTIC OF ELECTROMAGNETIC FIELD BY APPLYING DIFFERENT CONDITIONS.

Keywords : FINITE ELEMENT METHOD, GOVERNING EQUATION, ELECTROMAG-NET, MAGNETIC MATERIAL

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