ABSTRACT

This thesis proposes a partly analytical and partly numerical method of analysis for evaluating the propulsion, leviation and lateral forces in a single sided linear induction motor (SLIM). Attempts are made to analyse the motor assuming different models, starting from an idealistic model with infinitely long and wide stator and rotor to a realistic model which has a long stator with finite width and a rotor with a finite width and length. A method for lateral stabilization of the rotor is also suggested and subsequently analysed. In order to justify the method of analysis, an experimental model of the SLIM is constructed. The calculated flux distribution and forces at unity slip are compared with the experimental results and good agreement has been observed.

Key words : LIM, SLIM, vector potential, flux density, stream function, propulsion force, levitation force, lateral force, lateral stabilization.