

# Parametric Investigation of Static and Dynamic Regimes in Stacked Josephson Junctions

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The dynamics of Josephson phases in inductively coupled stacks of long Josephson Junctions is described by an initial boundary value problem for system of perturbed sine-Gordon equations. A detailed comparison analysis for the influence of the geometric parameters (number and length of junctions, coupling parameter) and the physical parameters (external current, external magnetic field and dissipation) on the solutions of this complicated nonlinear multiparametric problem is made. The regions of stability of the static solutions of the system with respect to the external current and the external magnetic field for different values of the geometric parameters are found. The cases of two, three and four stacked junctions are studied in detail and a comparison is made. Moving fluxons solutions are also investigated for different geometric parameters and dissipations. Finite Element Method and Finite Difference Method are used to solve numerically the dynamic and the corresponding static problems.

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