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Numerical simulation of fluxon dynamics in a Josephson junction array[1] USHNISH RAY, KENNETH SEGALL, NIKHIL FERNANDES — We present a numerical study of the dynamics of fluxons trapped in a parallel array of Josephson junctions. Simulations of switching current measurements have been performed in order to support experimental work in our group. Switching current measurements allow determination of the transition rate of the fluxon from its pinned state to a running state. We simulate the classical RCSJ equations of motion for a 9-junction parallel array, with and without frequency-dependent damping, and calculate switching current distributions by increasing the external current in the simulation. A new retrapping mechanism for fluxons, related to the coupling of the junctions in the array, has been identified. We present results from the simulations and comparisons to experiment.

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