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Statistics of vortex trapping in cyclically coupled Bose-Josephson junctions PARAG GHOSH, University of Illinois, Urbana Champaign, FERNANDO SOLS, Departamento de Física de Materiales, Universidad Complutense de Madrid, TONY LEGGETT, University of Illinois, Urbana Champaign — We investigate the problem of vortex trapping in cyclically coupled Bose-Josephson junctions. Starting with N independent BECs we allow the system to reach a stable circulation by adding a dissipative term in our semi-classical equations of motions. We then ask, *inter alia* the question: "Starting with an initial normal distribution of total phases with variance $\sim \sqrt{N}$ and allowing for phase slips, what is the probability to trap a stable vortex with winding number $2\pi m$"? We find that the final distribution of winding numbers is narrower than the initial distribution of total phases, indicating an increased probability for no-vortex configurations. The role of dissipation has been studied in determining the final probability distibution. It is also possible to get a non-zero circulation starting with zero total phase around the loop. The final width of the distribution scales as $\sim d \times N^{\alpha}$, where $\alpha = 0.47$ and $d < 1$ (indicating a shrinking of the final distribution), the actual value of d depending on the strength of dissipation.

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