

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Interaction of breathers with moving vortices in a Josephson junction ladder DEVIN EDWARDS, KEN SEGALL, Colgate University, JUAN MAZO, University of Zaragoza — Josephson junction arrays offer an important method to experimentally study nonlinear dynamics. We have studied Nb-AlO_x-Nb Josephson junction ladder arrays with 24 periods which support two distinct nonlinear modes. The first is a discrete breather, which is a spatially localized excitation that does not propagate through the ladder. The second is a propagating two pi phase shift, or moving vortex. Both modes have been observed independently in our arrays. Predictions have been made regarding the dynamics of the interactions of these two modes, but these have not been verified experimentally. One such prediction is that under some conditions the breather will ‘pin’ the propagating vortices and prevent them from passing beyond the breather. We will present theoretical simulations and recent experiments attempting to observe their interaction.

Devin Edwards
Colgate University

Date submitted: 20 Nov 2006

Electronic form version 1.4