

Abstract Submitted
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Hybridization of quantum spin waves in small structures VALENTYN NOVOSAD, Argonne National Lab, S.T. CHUI, University of Delaware, SAM BADER, Argonne National Lab — We apply the Holstein-Primakoff and Bogoliubov transformations to compute the spin wave states of small magnetic structures including the effect of the dipolar interaction. We found that as the film gets thicker, states with a significant $q=0$ component are hybridized with states with higher Fourier components. In the presence of a static magnetic field opposite to the magnetization direction, surface states that are responsible for magnetization reversal are coupled to the extended states. The response function is increased by an order of magnitude. This suggests an intriguing scenario for assisted switching of the magnetization with an additional external a.c. field.

S. T. Chui
University of Delaware

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