

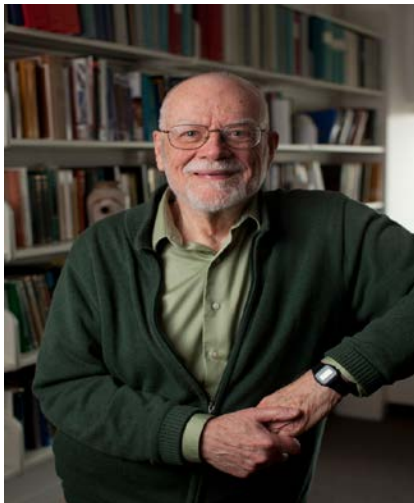


UNIVERSITY of
DENVER

PHYSICS AND ASTRONOMY

Presents

Experiments and thoughts on the localization of dynamical energy in nonlinear lattices



Wednesday, January 27, 2016

4:00 PM

F.W. Olin Hall Room 105

2190 E. Iliff Avenue

Presented by

Dr. A. J. Sievers

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The possibility that large amplitude, localized vibrational excitations can exist in periodic physical lattices with nonlinear forces has recently attracted renewed interest. The energy profile of these intrinsic localized modes (ILMs) resemble those of localized vibrational modes at defects in a harmonic lattice but, like solitons, they can propagate; however, unlike solitons they lose energy as they move through the lattice. In this talk I'll contrast the experimental techniques used to generate ILMs in a microscopic spin wave lattice with those used to explore localized vibrations of macroscopic micromechanical arrays. A surprising discovery is that under certain conditions the energy loss mechanism between the ILM and the plane wave spectrum can be removed. The end result is a soliton-like super-transmission channel for an ILM in a discrete physical lattice. Such an engineered, intrinsic, low loss pathway may prove to be a useful property for other nonlinear physical systems treated within a tight binding approximation.

HOST: Dr. Davor Balzar, (303) 871-2137, balzar@du.edu

**Join us for refreshments & follow-up discussions in Physics Building Room 116,
5:00-6:00 PM**