

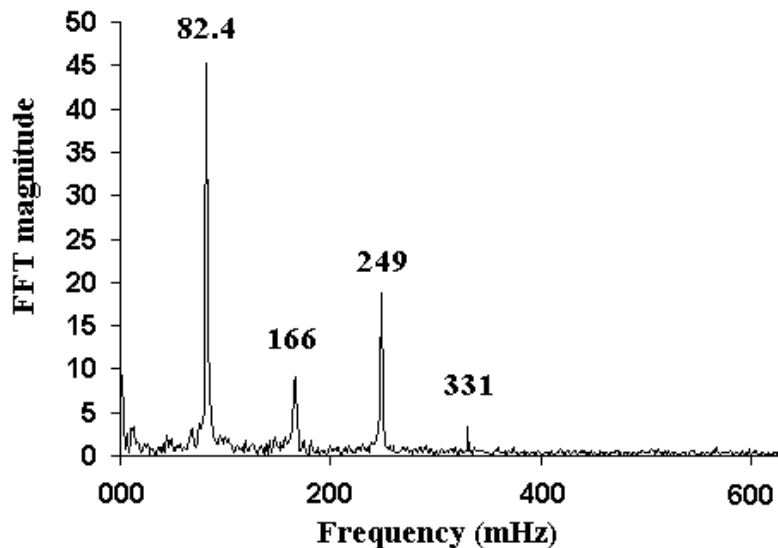
Physics Seminar

Wednesday 2/14/2007, 4:30pm
Willet Science Center 101

Randall Peters
Department of Physics
Mercer University

Canonical Forms of Anharmonicity – One Known, the Other Unknown

**Spectra of a compound pendulum excited by a low-energy drive
at 1/3 its resonance frequency of 249 mHz**



Elastic anharmonicity, which shows up in oscillators at large energy levels--has been thoroughly studied. It is the basis for properties as diverse as thermal expansion and chaotic motion. Damping anharmonicity, which is responsible for internal friction, impacts technology as diverse as seismometers and micro-electro-mechanical devices. The damping form appears to have been studied systematically by a single individual observing pendulum complexities over the course of two decades. This talk will describe some of his earliest experiments, but will focus on his latest studies involving the spectra of a driven compound pendulum. Experimental evidence is clear; theoretical understanding is unclear. What has been postulated by the speaker as a possible mechanism to explain damping anharmonicity is a new form of energy "quantization" with "level-jumps" described by the Compton energy scale. This postulated scale is important to the dynamics of mesoscopic systems, as opposed to the atomic scale of conventional quantum mechanics.

Please join us for light refreshments at 4:15pm outside WSC 109.