

DREXEL ANALYSIS SEMINAR

May 20, 2016

2-2:50 PM, Korman 245

Speaker: Timothy Faver (Drexel)

Title: Periodic Traveling Waves in Diatomic FPUT Lattices.

Abstract: We discuss periodic traveling waves for diatomic Fermi-Pasta-Ulam-Tsingou (FPUT) lattices consisting of two distinct masses and only one kind of spring. After diagonalizing certain operators in the traveling wave equations, the resulting system becomes highly amenable to the technique of bifurcation from a simple eigenvalue due to Crandall, Rabinowitz, and Zeidler. For the purpose of subsequent analysis, however, we require rather precise estimates on the solutions, and these estimates must be uniform over wave speeds close to the speed of sound. Therefore, we exploit the “diagonal” nature of the problem and obtain both the solutions and the uniform estimates via a fixed-point analysis, still inspired by the proofs of classical bifurcation. This is joint work with J. Douglas Wright.