1003-B1-175 **Carl V Lutzer*** (`cvlsma@rit.edu`), Dr. Carl V. Lutzer, Assistant Professor, Dept. of Math & Stats, Rochester Institute of Technology, Rochester, NY 14623-5603. *Eigenvalues and Hammer Juggling.* Preliminary report.

Get a hammer. Seriously, get a hammer. As an experiment, hold the hammer in front of you with its head pointing up (or down). Toss it upward (CAREFULLY!), end-over-end, and catch it after one revolution. As a second experiment, hold the hammer in front of you with its head pointing sideways, to the right. Toss the hammer upward, end-over-end, and catch it after one revolution. The orientation of the hammer will be the same when you catch it as when you toss in experiment #1 but the orientation changes in experiment #2. Why? The same thing happens with a standard text book. In this talk, the connection between the stability of rotation and eigenvalues will be discussed (a more detailed explanation will be posted online) and interesting connections to other topics in linear algebra will be presented. (Received August 18, 2004)