1014-M1-1159 **Rich Laverty*** (laverty@juniata.edu), 1700 Moore St., Brumbaugh Academic Center, A304, Huntingdon, PA 16652. *Transient Stress Analysis of Baseball-Bat Collision.* Preliminary report.

The collision of a baseball and bat has received considerable attention due to interest in improved performance for players, a natural interest in modeling physical phenomenon, and a concern for player safety. In this report we use an idealized beam theory to model the impact of the baseball and bat and to extract the coefficient of restitution, i.e., the ratio of the incident and return velocity of the ball. Our approach is to couple the beam equation with the equation of motion for the ball and solve for the motions of both numerically. The solution will locate the 'sweet spot' of the bat without using the nodes of the fundamental modes of vibration as landmarks. It will also permit a parametric examination of the danger from batted balls from bats of varying materials and geometries. (Received September 27, 2005)