

**Meeting:** 1003, Atlanta, Georgia, MAA CP J1, MAA Session on Projects and Demonstrations that Enhance a Differential Equations Course

1003-J1-799      **Leonard J. Lipkin\*** (llipkin@unf.edu), Department of Mathematics and Statistics, University of North Florida, 4567 St. Johns Bluff Rd., S., Jacksonville, FL 32224. *Oscillation, comparison, and separation of zeros.*

Sturm's theorem on the interlacing of zeros of solutions of second order linear equations is often mentioned in a standard elementary differential equations course. While students can see the possibility of this theorem by writing the solutions in the constant coefficient case, they can see much more by using the power of the computer. Moreover, they can study oscillations produced by a variety of springs (for example, aging, softening, hard, etc.) In this interactive computer module the students experiment with increasingly complex equations and pairs of equations, finally reaching the standard oscillation and comparison theorem. Along the way they supply explanations and/or proofs of the intermediate results that they observe. (Received September 29, 2004)