

962-L1-542

**Jeff L Stuart\*** ([jeff.stuart@usm.edu](mailto:jeff.stuart@usm.edu)), P.O. Box 5045, Hattiesburg, MS 39406. *Shake a Stick at Ill-Conditioning.*

Many students leave their first encounter with solving linear systems with the false impression that all nonsingular systems are well behaved. We will present a simple classroom demonstration and an in-class, cooperative exercise set that provide a gentle, nontechnical introduction to the relationship between geometry, scaling and conditioning. This relationship is developed in the context of how "shaky" data measurements can affect the accuracy of the solution. We will also discuss how the presentation can be augmented with computer exercises or printouts of computer experiments. The initial demonstration, which requires little more than a chalkboard, several long rods such as mop handles, and a few cooperative students acting as assistants, has been surprisingly effective in conveying notions of ill-conditioning in the context of  $2 \times 2$  linear systems. (Received September 15, 2000)