

BK02 3:30p.m. Promoting Active Learning in Physics Classes Using Interactive Demonstrations

*Kandiah Manivannan, Southwest Missouri State Univ.,
901 S. National Ave., Springfield, MO 65804-0094;
417-836-6425; fax: 417-836-6226; kam319f@smsu.edu*

*Cheryl P. Schaefer, Southwest Missouri State Univ.;
David E. Meltzer, Iowa State Univ.*

Physics demonstrators consider in-class demonstrations to be a very important part of instruction. Demonstrations can certainly make physics classes fun and entertaining, and can help to stimulate students' interest and curiosity. However, it has become increasingly clear that some form of interactive engagement is essential to maximize the effectiveness of classroom demonstrations.^{1,2} Only a handful of interactive curricular materials, such as ILDs², are currently available for in-class demonstrations. We will describe several interactive physics demonstrations suitable for any classroom setting that can easily be implemented without additional resources. The central feature is the use of the "problem-dissection" technique³ to break a concept into several linked mini-demonstrations. These are presented to the class in a sequence, while utilizing techniques³ for acquiring immediate feedback from all the students in the class. We present some preliminary findings on the effectiveness of these interactive demonstrations.

1. Pamela A. Kraus, *Promoting active learning in lecture-based courses: Demonstrations, tutorials, and interactive tutorial lectures*. Ph.D. dissertation. Seattle, WA: University of Washington (1997).
2. David R. Sokoloff and Ronald K. Thornton. "Using Interactive Lecture Demonstrations to Create an Active Learning Environment," *Phys. Teach.* **35**, 340 (1997).
3. David E. Meltzer and Kandiah Manivannan. "Promoting Interactivity in Physics Lecture Classes," *Phys. Teach.* **34**, 72 (1996).