

Abstract for an Invited Paper
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Active Learning in Physics Technology and Research-based Techniques Emphasizing Interactive Lecture Demonstrations¹
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Physics education research has shown that learning environments that engage students and allow them to take an active part in their learning can lead to large conceptual gains compared to traditional instruction. Examples of successful curricula and methods include *Peer Instruction*, *Just in Time Teaching*, *RealTime Physics*, *Workshop Physics*, *Scale-Up*, and *Interactive Lecture Demonstrations (ILDs)*. An active learning environment is often difficult to achieve in lecture sessions. This presentation will demonstrate the use of sequences of *Interactive Lecture Demonstrations (ILDs)* that use real experiments often involving real-time data collection and display combined with student interaction to create an active learning environment in large or small lecture classes. Interactive lecture demonstrations will be done in the area of mechanics using real-time motion probes and the Visualizer.® A video tape of students involved in interactive lecture demonstrations will be shown. The results of a number of research studies at various institutions (including international) to measure the effectiveness of *ILDs* and guided inquiry conceptual laboratories will be presented.

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