A Shift Toward Scientific Reasoning: The Introductory Physics Lab

Abstract

For the past year, John Walkup and Roger Key have spearheaded a transformation of our introductory physics labs to elevate scientific reasoning. In a revised lab manual that is currently under development, every one of our existing PHYS-4A lab activities would either receive an overhaul or be replaced altogether. These efforts have culminated in four publications, with another one in preparation. Stephan Squire, a graduate student of physics at the time, measured the efficacy of this new approach in his M.S. thesis research, although the sample sizes were likely too small to generate conclusive results. In this colloquium, John, Roger, and Stephan will discuss this new paradigm in lab design and how it alters the learning environment for our future scientists and engineers.