

Abstract Submitted
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On-Ramp: Improving students' understanding of lock-in amplifiers¹ SETH DEVORE, CHANDRALEKHA SINGH, JEREMY LEVY, University of Pittsburgh — A lock-in amplifier is a powerful and versatile instrument which is used frequently in condensed matter physics research. However, many students struggle with the basics of a lock-in amplifier and they have difficulty in interpreting the data obtained with this device in diverse applications. To improve students' understanding, we are developing an “On-Ramp” tutorial based on physics education research which makes use of a computer simulation of a lock-in amplifier. During the development of the tutorial we interviewed several faculty members and graduate students. The tutorial is based on a field-tested approach in which students realize their difficulties after predicting the outcome of experiments that use a lock-in amplifier; students can check their predictions using simulations. The tutorial then guides students toward a coherent understanding of the basics of a lock-in amplifier. This poster will discuss the development and assessment process.

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