



Mastering the Digital Oscilloscope

California Institute of Technology, June 21–23, 2017.

(One set-up available for four participants)

Host and Mentor



Eric Black is a Lecturer of Physics at the California Institute of Technology. He received his Ph.D. in condensed-matter physics from the University of Colorado at Boulder in 1997 before coming to Caltech, first as a postdoc and then as a staff scientist, as part of the Laser Interferometer Gravitational-wave Observatory (LIGO) project. He currently teaches Caltech's freshman and senior physics laboratories.

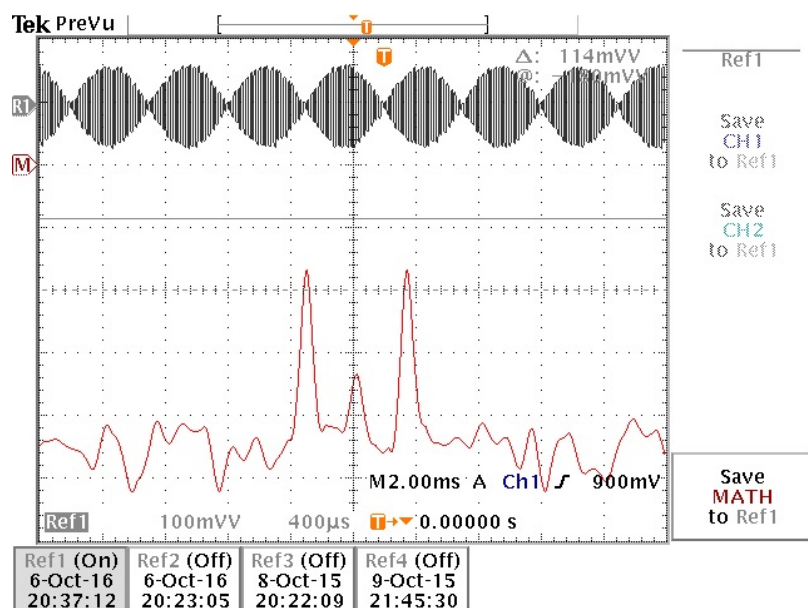
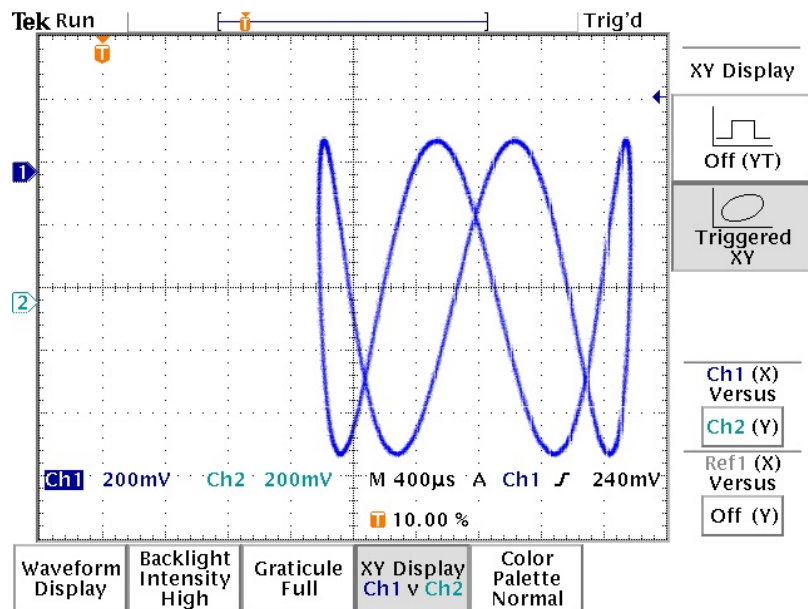
Dr. Eric D. Black, California Institute of Technology, Department of Physics, MC 264-33 Pasadena, CA 91125. Email: black@its.caltech.edu. Telephone: 626-395-3858.



Kenneth G. Libbrecht (B.S., Caltech; Ph.D. Princeton) is professor of physics at the California Institute of Technology where he is involved in the Laser Interferometer Gravitational Wave Observatory (LIGO), the growth of crystals, notably snow crystals, and physics education. He has helped turn a number of Caltech's new experiments for the teaching labs into commercial products, which may be seen at <http://newtonianlabs.com> and in this Immersion.

Kenneth G. Libbrecht, Professor of Physics California Institute of Technology, Department of Physics, MC 264-33 Pasadena, CA 91125. Email: kgl@caltech.edu. Telephone: 626-395-3722.

There are a certain number of essential tools that are so widely used that every aspiring scientist needs to know how to use them. In this lab we cover the oscilloscope, particularly the digital, networked oscilloscope. This immersion will cover basics such as auto vs. normal triggering modes, coupling, zoom, and delay, as well as more advanced topics including aliasing, the Nyquist-Shannon sampling theorem, Fast Fourier Transforms, and networking. We will be using Tektronix TDS3012B oscilloscopes, but most of the concepts apply to any modern 'scope. If you want to really master the oscilloscope, and to transmit that mastery to your students, this is the lab for you.



Please note that the Jonathan F. Reichert Foundation has established a grant program ([ALPhA webpage](#); [Foundation website](#)) to help purchase apparatus used in Laboratory

Immersion. Limitations and exclusions apply, but generally speaking the foundation may support up to 40% of the cost of the required equipment.

Copyright © 2007-2017 by the ***Advanced Laboratory Physics Association.***