

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Conceptual Learning Approach to Waves¹ JOHN CERNE, University at Buffalo, SUNY, FRANK NAPPO, Lockport High School, MICHAEL GERFIN, University at Buffalo, SUNY — Waves represent one of the most important concepts in physics, playing a crucial role in topics ranging from acoustical phenomena, electricity and magnetism, optics, Fourier analysis, and even quantum mechanics. However, since waves have both a temporal and spatial dependence (often in more than one dimension) that may be difficult to visualize, many undergraduate and graduate students have a poor understanding of even basic wave concepts. We are creating a web site (electron.physics.buffalo.edu/claw/) that explains many basic wave concepts using dynamic and interactive graphical simulations. Our goal is to create simulations that enable students to visualize how waves behave and better connect this behavior to the equations and concepts that describe the use of waves in applications. There are many excellent web sites using similar graphical interactive tools, but they tend to focus on mechanics, electrostatics, and magnetism. I am actively using this site for my introductory physics courses, as well as a magneto-polarimetry teaching lab that I have created (www.physics.buffalo.edu/cerne/education/moke_manual.pdf).

¹Supported by the Research Corporation Cottrell Scholar Award and NSF-CAREER-DMR0449899.

John Cerne
University at Buffalo, SUNY

Date submitted: 30 Nov 2007

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