

Quantum Mechanics for Everyone: Can it be done with Technology?

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The Visual Quantum Mechanics project has created a series of teaching/learning units to introduce quantum physics to a variety of audiences ranging from high school students who normally would not study these topics to undergraduate physics majors. Most recently we have been developing materials relating modern medical procedures and contemporary physics. In all of these materials interactive computer visualizations are coupled with hands-on experiences to create a series of activities which help students learn about some aspects of quantum mechanics. Our goal is to enable students to obtain a qualitative and, where appropriate, a quantitative understanding of contemporary ideas in physics. Included in the instructional materials are student-centered activities that address a variety of concepts in quantum physics and applications to devices such as the light emitting diode, the electron microscope, an inexpensive infrared detection card, and the Star Trek Transporter. Whenever possible the students begin the study of a new concept with an experiment using inexpensive equipment. They, then, build models of the physical phenomenon using interactive computer visualization and conclude by applying those models to new situations. For physics students these visualizations are usually followed by a mathematical approach. For others the visualizations provide a framework for understanding the concepts. Thus, Visual Quantum Mechanics allows a wide range of students to begin to understand the basic concepts, implications and interpretations of quantum physics. At present we are building on this foundation to create materials which show the connection between contemporary physics and modern medical diagnosis. Additional information is available at <http://web.phys.ksu.edu/>

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