

Physics Colloquium

Exploring Student Ideas About Energy: The Hydrogen Atom

Dr. Jeff Morgan

Assistant Professor of Physics and Science Education
Physics Department
University of Northern Iowa

September 16, 2009

4:00 p.m.

114 Begeman Hall

Because of its relatively simple structure, the hydrogen atom is studied extensively in many introductory quantum physics courses. Most textbooks include Bohr's atomic model, which states that the possible electron energies in atoms are quantized. Often, the discussion includes one or more diagrams of hydrogen's energy levels, including energies of various levels. Although the diagrams may seem relatively simple, they are typically quite different than diagrammatic representations of energy encountered in introductory physics courses.

Between 2007 and 2009, I interviewed 19 students who were enrolled in Modern Physics at the University of Northern Iowa. The five-session series of interviews centered on various diagrammatic representations of energy encountered during the course, and began with a session discussing an energy-level diagram of hydrogen. In this talk, I present results from the interviews, common difficulties many students had with understanding the diagram, and discuss instructional implications.

Everyone Welcome! Refreshments Provided.