



Physics Education Research Group @ Colorado



What is PER@C?

The Physics Education Research Group at Colorado (PER@C) is one of the newest and largest research programs in PER in the nation. Our research group develops and studies: uses of technology in physics education, assessments (conceptual, epistemological, and belief oriented), theoretical models of students learning physics, social and contextual foundations of student learning, examination of successful educational reforms and replication studies of such reforms, and student problem-solving in physics. We sponsor a number of educational reforms in physics, which range from pre-college to post-doctoral. The research group includes faculty, staff, and students from both the Department of Physics and the School of Education.

PER@C Successes:

- Six faculty, including Nobel Laureate Carl Wieman, and six researchers and post-docs make PER@C the largest PER group in the nation
- With over \$12 million in external funding, PER@C is one of the best-funded programs of its kind in the nation.
- PER@C is one of the most published PER groups in the nation with papers appearing in *Science*, *Nature: Physics*, *Physics Today*, *American Journal of Physics*, and *Physical Review*.
- PER@C faculty lead corner-stone efforts in science education at CU, including nationally recognized programs

PER@C: Leading the way in understanding how science is learned and transforming the teaching of science.

per.colorado.edu
www.colorado.edu/istem

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PER@C Highlights

The PhET Interactive Simulations Project: Developing, testing, and researching online simulations in physics, and now, chemistry, biology, geology and math.

Lower Division Course Transformation: Developing materials, implementing, evaluating and conducting research on transformation in Physics 1, 2 and 3.

Upper Division Course Transformation: Transforming junior Electricity and Magnetism & Quantum Mechanics, and use of PER-based tools in courses as advanced as the graduate level.

Assessments: The development of research-based instruments for evaluation of student learning including: attitudes and beliefs, quantum mechanics, and upper division E/M.

Theoretical Work: Developing theories of student learning in physics, including student use of representations, analogies, simulations; student development of epistemic and ontological commitments in physics; the development of future teachers, graduate students and faculty.

Areas of focus include **institutional change** in physics and science, **gender studies**, and **informal science education**.

The Learning Assistant Program: Research on the nationally recognized effort that couples course transformation with teacher recruitment and preparation.

