MONTANA STATE UNIVERSITY | College of LETTERS & SCIENCE

Physics Colloquium

Wednesday, April 3rd
4:10 – 5:00 PM
Barnard Hall 108

What does it mean to see quantum mechanics?

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Abstract: Quantum mechanics is crucial to a lot of modern physics research and current technologies, so it is important to teach it to physics students. However, the subject is often considered very mathematical and abstract, which may intimidate many capable students, potentially turning them away from the field. One way some instructors of undergraduate courses are trying to make the subject more concrete is by incorporating a sequence of quantum optics experiments into their courses, so students have the opportunity to see quantum phenomena themselves. In this talk, I will discuss education research investigating learning outcomes for students working with these experiments across different institutions. First, I will discuss the landscape of these experiments, including how and why they are used in undergraduate courses. Next, I will present student and instructor ideas about why seeing quantum effects in experiments is important along with a discussion of what contributed to students achieving related learning outcomes. Last, I will briefly discuss how student ideas of what is quantum or classical in the experiments changed as they worked through the experiments. This work can help initiate conversations about how quantum experiments can be most effectively incorporated into the undergraduate physics curriculum.

Host: Shannon Willoughby

**** Refreshments served in the Barnard second floor atrium at 3:45. ****