

CSAAPT Spring 2022 Semi-Virtual Meeting



Chesapeake Section of the
American Association of Physics Teachers
Spring 2022 Semi-Virtual Meeting
April 2, 2022 @ **RADFORD** UNIVERSITY

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Type: **Talk**

The science fiction of quantum measurement instruction

Saturday, April 2, 2022 8:30 AM (15 minutes)

Quantum mechanics instruction needs to be updated to teach quantum information science to the future quantum workforce. Physics departments should modify their curriculum to support this, especially on the quantum sensing side, which is often neglected in the rush to teach quantum computing. One key element is to no longer teach a fictionalized version of quantum measurement, which seems to be devoid of any reality. Measurement does not involve a quantum system entangling with a classical device and moving a pointer with wavefunction collapse occurring at some ill-defined moment. Instead, we need to teach students what measurement really is by removing the science fiction and bringing back the science facts. In this talk, I will discuss some representative experiments used to measure single quanta, and explain why their paradigm is different from what textbooks say.

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