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Strategies to help students learn quantum mechanics using research-validated tools[1]

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Learning quantum mechanics is challenging. To help improve student understanding of quantum mechanics concepts, we have been conducting investigation of the difficulties that students have in learning quantum mechanics and we are using research as a guide to develop Quantum Interactive Learning Tutorials (QuILTs) as well as tools for peer-instruction. The goal of QuILTs and peer-instruction tools is to actively engage students in the learning process and to help them build links between the formalism and the conceptual aspects of quantum physics. These learning tools focus on helping students integrate qualitative and quantitative understanding without compromising technical content. In this talk, I will discuss a framework for understanding students' difficulties in quantum mechanics and give examples of how research-validated learning tools and pedagogies can help students develop a good grasp of quantum mechanics. .

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