

Abstract Submitted
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A Single-axis Tunneling Microscope for Undergraduate Labs

JOSHUA P. VEAZEY, Grand Valley State University — I will discuss the development of a low-cost single-axis tunneling microscope (ZTM) for learning about quantum mechanics and solid state physics in undergraduate labs. The device differs from a scanning tunneling microscope in that it is only capable of controlling the tip-sample separation (along the z-axis). Further minimizing costs, an off-the-shelf ceramic capacitor (MLCC) made of piezoelectric material is used as the actuator. Students will be able to observe the exponential dependence of the width of the tunneling barrier (I-z), as well as the local electronic density of states (I-V).

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