



Adventures with Oscillators!

Beer Bottles, Nanorods,
and a Classical/Quantum
Comparison

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— DEPARTMENT OF —
**PHYSICS &
ASTRONOMY**

Similar mathematical tools are often used across different physical contexts. This talk examines two different applications—one classical, and one quantum—of the driven oscillator, before discussing differences between classical and quantum versions of a toy model. The excitation of the fundamental acoustical resonance of a beer bottle provides a relevant classical scenario, and the excitation of plasmonic resonances by an electron beam provides a relevant quantum scenario. An abstracted model of the latter that couples a one-dimensional oscillator to a one-dimensional scattering particle shows how entanglement is at the heart of the differences between classical and quantum models.