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**'Relativistic' corrections to the mass of a plucked guitar string** MICHAEL KOLODRUBETZ, Univ of California - Berkeley, ANATOLI POLKOVNIKOV, Boston University — Quantum systems respond non-adiabaticity when parameters controlling them are ramped at a finite rate. If the parameters themselves are dynamical  for instance the position of a box that defines the boundary of a quantum field  the feedback of these excitations gives rise to effective Newtonian equations of motion for the parameter. For the age old problem of photons in a box, this correction gives rise to a mass proportional to the energy of the photons. We show that a similar correction arises for a classical guitar string plucked with energy $E$; moving clamps at the ends of the string requires inertial mass $m = 2E/c_s^2$, where $c_s$ is the speed of sound. This quasi-relativistic effect should be observable in freshman physics level experiments. We then comment on how these simple methods have been readily extended to treat problems such as ramps and quenches of strongly-interacting superconductors and dynamical trapping near a quantum critical point.

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