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Ghosts without Runaway

Tuesday, March 15, 2022 2:00 PM (1h 20m)

I will discuss our recent work *Phys.Rev.Lett.* 128 (2022) 4, 041301 in which we present a simple class of mechanical models where a canonical degree freedom interacts with another one with a negative kinetic term, i.e., with a ghost. We prove analytically that the classical motion of the system is completely stable for all initial conditions, notwithstanding that the conserved Hamiltonian is unbounded from below and above. Numerical computations fully supported this. Systems with negative kinetic terms often appear in modern cosmology, quantum gravity, and high energy physics and are usually deemed as unstable. Our result demonstrates that for mechanical systems this common lore can be too naïve and that living with ghosts can be stable.

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