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Ghosts without runaway instabilities

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Ghosts, i.e. degrees of freedom with negative kinetic energies, have been used in cosmology to tackle various issues such as dark energy or non standard dynamics of the universe. On the other hand, field theory models with ghosts are usually considered as suffering from a deadly instability. This instability is often thought to appear already at classical level and in mechanical models with just a ghost oscillator coupled to a positive energy (standard) one. We show that it is not the case, in a large class of such mechanical models where the motion can be shown analytically to be fully stable thanks to integrability. This is based on a work in collaboration with Aaron Held, Shinji Mukohyama and Alex Vikman.

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