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Rethinking stability

Thursday 26 October 2023 10:15 (1 hour)

It's long been recognized that higher-order theories generically propagate an excess of degrees of freedom which, to make matters worse, are associated with negative (kinetic) energies. These are known as Ostrogradski instabilities. Until very recently, such instabilities were immediately disregarded as unphysical and methods were developed to construct theories that would avoid them. Indeed, this has been a very active research subject in the context of gravity theories, with a focus on cosmological applications. A trickle of counterexamples, numerical first and analytical shortly afterwards, confront the established understanding. These examples call for a profound reflection on stability, physically viable theories and theory-construction mechanisms.

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