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Nonvacuum stability of the Milne model

The Milne model is the only cosmological vacuum solution to Einstein's equations (with vanishing cosmological constant), for which nonlinear (future-) stability is proved, due to the work of Andersson-Moncrief. We present a first generalisation of this result to the nonvacuum case, namely to the Einstein-Vlasov system. This system models spacetimes containing ensembles of self-gravitating, collisionless particles. We, in particular, introduce a new technique to combine earlier approaches to control the energy-momentum tensor of massive collisionless matter in cosmological spacetimes with a physically motivated energy estimate that is necessary to establish sufficient decay properties of the matter fields. This is joint work with Lars Andersson.