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Massive gravity and cosmology

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The search for a consistent theory of finite-range gravity is a longstanding problem and well motivated by both theoretical and observational considerations. On the theoretical side, whether there exists such a consistent extension of general relativity by a mass term is a basic question of classical field theory. After Fierz and Pauli's pioneering attempt in 1939, this issue has been attracting a great deal of interest. On the observational side, continuing experimental probes of gravity have revealed new unexpected phenomena at large scales. One of the most profound discovery is the cosmic acceleration, which was found in 1998. The extremely tiny energy-scale associated with the cosmic acceleration hints that gravity might need to be modified in the infrared. The massive gravity is one of the most interesting attempts in this direction. In this talk, after reviewing the history and recent developments of massive gravity, I will describe cosmological solutions and their stability.

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