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Dynamical Analogue Quantum Simulators

JENS EISERT, Freie Universitaet Berlin

Complex quantum systems out of equilibrium are at the basis of a number of long-standing questions in physics. This talk will be concerned on the one hand with recent progress on understanding how quantum many-body systems out of equilibrium eventually come to rest, thermalise and cross phase transitions, on the other hand with dynamical analogue quantum simulations using cold atoms probing such questions [1-4]. In an outlook, we will discuss the question of certification of quantum simulators, and will how this problem also arises in other related settings, such as in Boson samplers [5,6].

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