Dynamics and return to equilibrium for infinite quantum gases in the mean-field approximation

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In this talk I will review several results about the well-posedness and long time behavior of the Hartree equation describing an infinite quantum gas with short range interactions, in the neighborhood of a given equilibrium state. Well-posedness is based on the use of a generalized relative entropy. The return to equilibrium, under a Penrose-type linear stability condition, follows from some Strichartz inequality proved together with Frank, Lieb and Seiringer. In the last part I will also mention the link with the Vlasov equation.

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