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One dimensional Bose gas revisited - from quasicondensation to solitons

Low dimensional quantum systems are interesting. Their statistical properties at nonzero temperatures may be studied with the help of classical fields. By looking first at the soluble ideal gas problem one may optimize the high energy cut-off in the method. With classical fields we may reexamine the quasicondensation - finding it practically does not depend on the sign of interaction and then look for solitons. First we show how the solitons emerge during rapid cooling process - a realization of Kibble-Zurek scenario, and then find that they are present even in thermal equilibrium.

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