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GUEST LECTURE

How to model ultracold Bose gases at non-zero temperature

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Starting from the basic system Hamiltonian for ultracold Bose gases (in second quantisation), I will discuss how different theoretical models arise in different levels of approximation (beyond the Gross-Pitaevskii equation); the emphasis will be on the physics contained in each model, and what advantages and disadvantages different models have in dealing with different regimes of experimental relevance (rather than focusing on the details of the models). At the end of these lectures the students will have heard (and seen a demonstration of) some of the most common finite temperature approaches for modelling ultracold Bose gases (starting from basic models, and in order of increasing complexity). To gain more insight into these approaches, the lectures will also discuss the application of such theories to the cases of damping of elementary excitations, and the dynamics of so-called dark solitons (both of which will be appropriately introduced).

**Mittwoch, 16. März 2011
14:00 bis 17:45 Uhr
Seminarraum Atominstitut**

J. Schmiedmayer, I. Mazets