Contribution ID: **95** Type: **Talk**

【252】Universal upper bounds on the Bose-Einstein condensate

Wednesday 23 August 2017 14:30 (15 minutes)

For N hard-core bosons on an arbitrary lattice with d sites and independent of additional interaction terms we prove that the hard-core constraint itself already enforces a universal upper bound on the Bose-Einstein condensate given by $N_{max} = (N/d)(d - N + 1)$. This bound can only be attained for one-particle states $|\varphi\rangle$ with equal amplitudes with respect to the hard-core basis (sites) and when the corresponding N-particle state $|\Psi\rangle$ is maximally delocalized. This result is generalized to the maximum condensate possible within a given sublattice. We observe that such maximal local condensation is only possible if the mode entanglement between the sublattice and its complement is minimal.

Author: Dr SCHILLING, Christian (University of Oxford)

Co-authors: Mr TENNIE, Felix (University of Oxford); Prof. VEDRAL, Vlatko (University of Oxford)

Presenter: Dr SCHILLING, Christian (University of Oxford)

Session Classification: Theoretical Physics

Track Classification: Theoretical Physics