Quantum Physics

One Dimensional Magnetized TG Gas Properties in an External Magnetic Field

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(Submitted on 31 Dec 2009)

With Girardeau's Fermi-Bose mapping, we have constructed the eigenstates of a TG gas in an external magnetic field. When the number of bosons N is commensurate with the number of potential cycles M, the probability of this TG gas in the ground state is bigger than the TG gas raised by Girardeau in 1960. Through the comparison of properties between this TG gas an Fermi gas, we find that the following issues are always of the same: their average value of particle's coordinate and potential energy, system's total momentum, single-particle density and the pair distribution function. But the reduced single-particle matrices and their momentum distributions between them are different.

Comments: 6 pages, 4 figures
Subjects: **Quantum Physics (quant-ph)**
Cite as: **arXiv:1001.0116v1 [quant-ph]**

Submission history

From: Zhaoliang Wang [view email]
[v1] Thu, 31 Dec 2009 10:41:00 GMT (950kb)

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