UNIVERSITÄT DUISBURG ESSEN

Offen im Denken

Theorie-Kolloquium WS 2022/23
Di 13.12.2022, 14:00-15:30
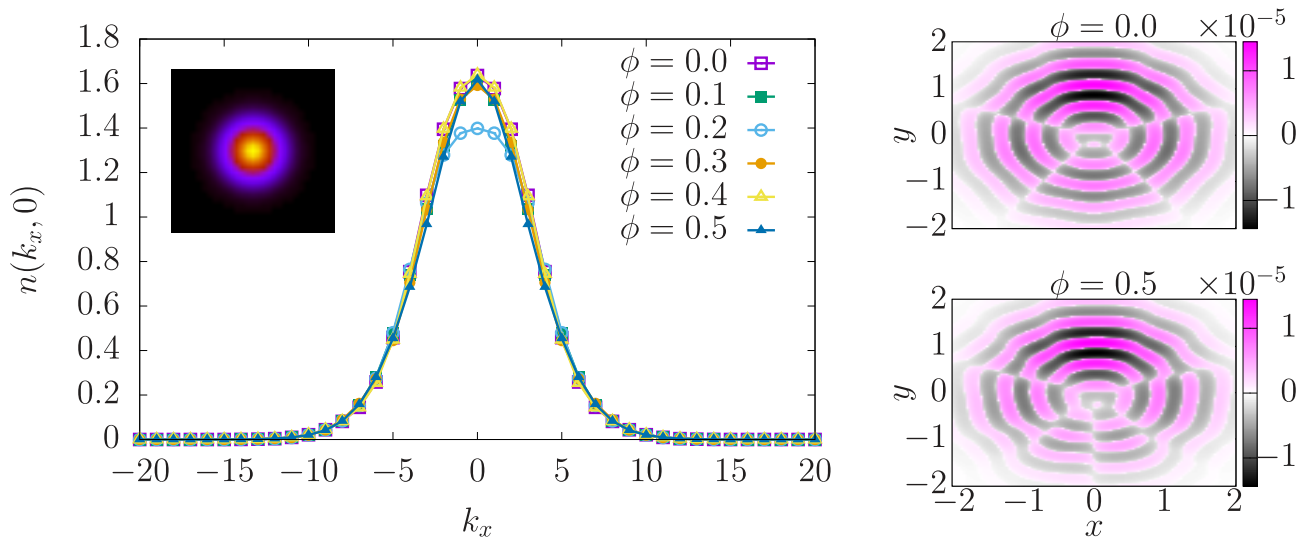**MC 231** & online (URL in E-Mail)

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Sondertermin Di 13.12., 14:00 Uhr, MC 231

Exact one-particle density matrix for SU(N) fermionic matter-waves in the strong repulsive limit

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We consider a gas of repulsive N-components fermions confined in a ring-shaped potential, subject to an effective magnetic field. For large repulsion strengths, we work out a Bethe ansatz scheme to compute the two-point correlation matrix and then the one-particle density matrix.

Our results holds in the mesoscopic regime of finite but sufficiently large number of particles and system size that are not accessible by numerics. We access the momentum distribution of the system and analyse its specific dependence of interaction, magnetic field and number of components N.

In the context of cold atoms, the exact computation of the correlation matrix to determine the interference patterns that are produced by releasing cold atoms from ring traps is carried out.