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【254】 Physical Relevance of Generalized Pauli constraints

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The fermionic exchange symmetry does not only imply Pauli's exclusion principle but even further constraints on fermionic occupation numbers. In particular, generalized Pauli constraints become relevant whenever they are (approximately) saturated. We explore the occurrence of such (quasi)pinning through a comprehensive analysis of an analytically solvable model (Harmonium). By analysing the strength of quasipinning as function of the particle number, coupling strength, spatial dimension and degree of spin polarization we reveal the mechanism behind it. It is the conflict of energy minimization and fermionic exchange symmetry. Consequently, our results suggest the existence of a microscopic Pauli pressure which forces the system into an approximate saturation of the generalized Pauli constraints.

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