复旦大学物理系物质科学报告

Physics Department Colloquium

Mott Physics, Sign Structure, and High-Temperature Superconductivity

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Fermi sign structure of a Fermi gas will be fundamentally changed in the presence of strong interaction. I will discuss the new sign structure for the t-J model and Hubbard model, which can be precisely captured by a nonintegrable phase factor as reduced Fermion signs. The quantum interference due to such a sign structure is expected to dictate the novel behavior in (doped) Mott insulators. Utilizing DMRG numerical calculation, we demonstrate that a single hole doping into a Mott insulator is generally localized, thanks to the aforementioned destructive quantum interference, which is purely of strong correlation origin and is different from the Anderson localization due to disorders. Important implications for high-Tc superconductivity will be discussed.

Time：2:00 pm, Tuesday, 2013.12.03

Location：Physics Building, Room 221B

(Cookies and coffee are served from 1:30 pm)