复旦大学物理系物质科学报告

Physics Department Colloquium

Spin-orbit coupled degenerate Fermi gas

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Abstract：We report the first experimental realization of SO coupled degenerate Fermi gas. Evidences of spin-orbit coupling have been obtained from the Raman Rabi oscillation and the spin-dependent momentum distribution asymmetry. We also find that the momentum distribution in helical bases is consistent with topological changes of Fermi surfaces. Recently, we bring the experimental system close to a Feshbach resonance. We report characteristic blue and red shifts in the atomic and molecular responses, respectively. And we demonstrate a dynamic process in which SO coupling can coherently produce s-wave Feshbach molecules from a fully polarized Fermi gas, and can induce a coherent oscillation between Feshbach molecules and spin polarized gas. This progress enables us to study stronger pairing and higher Tc enhanced by SO coupling in resonant interacting Fermi gases and topological insulator and topological superfluid in a more flexible setup in near future.

Time：2:00pm, Tuesday, 18 November, 2014

Location：Physics Building, Room 221B

(Cookies and coffee will be served from 1:30 pm)