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Experimental realization of spin-orbit coupling in degenerate Fermi gas

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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. In the near future, we plan to bring the system close to a Feshbach resonance where the s-wave interaction become strongly attractive. 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.