

J. Zhang: *Experimental realization of spin-orbit coupled degenerate Fermi gas*

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 system close to a Feshbach resonance where the s-wave interaction becomes strongly attractive. This progress enables us to study stronger pairing and higher T_c enhanced by SO coupling in resonant interacting Fermi gases and topological insulator and topological superfluid in a more flexible setup in near future.

- [1] P. Wang, Z. Yu, Z. Fu, J. Miao, L. Huang, S. Chai, H. Zhai, J. Zhang, Phys. Rev. Lett. 109, 095301 (2012)
- [2] P. Wang, Z. Fu, L. Huang, J. Zhang, Phys. Rev. A **85**, 053626 (2012).
- [3] Z. Fu, P. Wang, L. Huang, Z. Meng, J. Zhang, Phys. Rev. A **86**, 033607 (2012).
- [4] Z. Fu, L. Huang, Z. Meng, P. Wang, X-J. Liu, H. Pu, H. Hu, J. Zhang, arXiv: 1303.2212