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Pairing dynamics of polar states in quenched p-wave superfluid Fermi gases

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Apr. 2000-Mar. 2003 Ph.D student.Department of Physics, School of Science, University of Tokyo.
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Abstract：

The quench problem is one of the most basic setups for studying the non-equilibrium dynamics. We have performed the first study on the quench dynamics of polar states in 3D p-wave superfluid Fermi gases [1]. The anisotropy of the pairing interaction together with the presence of the centrifugal barrier results in profoundly different pairing dynamics compared to the s-wave case. Especially, we have found the novel dynamics of oscillatory depletion or filling in the momentum occupation depending on the direction of the quench, and the emergence of a vortex-ring structure in pair amplitudes. Our work also clarifies the mechanism of these dynamics and figure out the important role of quasi-bound (resonant) state in the quench dynamics.

Reference

[1] S. Yoon and G. Watanabe, Phys. Rev. Lett. 119, 100401 (2017).

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