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Gapped superconductivity with all symmetries in InSb (110) quantum wells in proximity to Fulde-Ferrell-Larkin-Ovchinnikov superconductor[1] FEI YANG, MING WEI WU, Univ of Sci Tech of China — We show that all the singlet even-frequency (SE), singlet odd-frequency (SO), triplet even-frequency (TE) and triplet odd-frequency (TO) pairings and the corresponding order parameters (gaps) can be realized in InSb (110) spin-orbit-coupled quantum well in proximity to Fulde-Ferrell-Larkin-Ovchinnikov (FFLO) superconductor. It is revealed that with the proximity-induced SE order parameter, SO (TE) pairing is induced due to translational (spin-rotational) asymmetry by the center-of-mass momentum of Cooper pair in FFLO phase (spin-orbit coupling). With translational and spin-rotational asymmetries, the TO one is also realized. Then, we show that the corresponding order parameters can be obtained from the self-energy of the electron-electron Coulomb interaction with the dynamic screening. The SE and TE order parameters exhibit the conventional s-wave and p-wave characters in the momentum space, respectively. Whereas SO and TO ones show the p-wave and d-wave characters, respectively. Moreover, the p-wave character of the SO order parameter exhibits anisotropy with respect to the direction of the center-of-mass momentum. While for the TO one, we find that d_{x^2}- and d_{xy}-wave characters can be obtained with respect to the direction of the center-of-mass momentum.

[1]Hefei National Laboratory for Physical Sciences at Microscale, Department of Physics, and CAS Key Laboratory of Strongly-Coupled Quantum Matter Physics, University of Science and Technology of China, Hefei, Anhui, 230026, China

Fei Yang
Univ of Sci
Tech of China

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