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Orbital-Parity Selective Superconducting Pairing Structures of Fe-based Superconductors under Glide Symmetry CHIAHUI LIN, Brookhaven National Laboratory, CHUNG-PIN CHOU, Beijing Computational Science Research Center, WEI-GUO YIN, WEI KU, Brookhaven National Laboratory — We show that the superconductivity in Fe-based superconductors consists of zero and finite momentum $(\pi, \pi, 0)$ Cooper pairs with the same and different parities of the Fe $3d$ orbitals respectively. The former develops the distinct gap structures for each orbital parity, and the latter is characteristic of spin singlet, spacial oddness and time reversal symmetry breaking. This originates from the unit cell containing two Fe atoms and two anions of staggered positioning with respect to the Fe square lattice. The in-plane translation is turned into glide translation, which dictates orbital-parity selective quasiparticles. Such novel pairing structures explain the unusual gap angular modulation on the hole pockets in recent ARPES and STS experiments. Work supported by DOE DE-AC02-98CH10886 and Chinese Academy of Engineering Physics and Ministry of Science and Technology.

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