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Sign Reversal Superconducting Gaps in Electron Fermi Surface Dominated System ($Li_{1-x}Fe_xOH$)FeSe ZENGYI DU, XIONG YANG, QIANGQIANG GU, HAI LIN, DELONG FANG, GUAN DU, JIE XING, HUAN YANG, XIYU ZHU, HAI-HU WEN, Nanjing Univ, NANJING UNIVERSITY TEAM — In the research of iron based superconductors, the core issue is the pairing mechanism. The early proposed S+- manner, although is supported well by experimental data in iron based superconductors with both electron and hole pockets, seems however, facing challenges in some FeSe-derivative superconductors with only the electron-like Fermi surfaces. Our scanning tunneling microscopy measurements on ($Li_{1-x}Fe_x$)OHFeSe single crystal, which contains only electron pockets on M points, reveal two superconducting gaps and quasiparticle interference (QPI) analysis allows us to rule out the *d*-wave gap and assign the larger (smaller) gap to the outer (inner) hybridized Fermi pockets. We report the evidence of sign reversal between two resolved superconducting gaps. The spectra on Fe-site impurities measured in zinc doped ($Li_{1-x}Fe_x$)OHFeSe show strong in-gap bound states which are suppressed but hardly shifted with an applied 11T magnetic field. This typical feature is the evidence for sign reversal between two superconducting gaps. And we also get support from the QPI measurement around the single non-magnetic impurity. Our experimental results reveal the sign reversal of the gaps even in the electron Fermi surface dominated system.

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