

Abstract Submitted
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**Orbital-ordering and In-plane Anisotropy in Low-moment
Ground-state of Parent Compounds of Iron-based Superconductors¹**

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— Since the discovery of the iron-based superconductor, a large discrepancy between experimental observations and first-principles calculations in the magnetic moment of the antiferromagnetic state of the parent compounds has been intensively debated. The observed moment values are about 3 to 5 times smaller than those of the calculation although there is a variety of the difference depending on the materials. Very recently, an interesting calculation data fully reproducing the observed low moment has been suggested by F. Cricchio et al., (Phys. Rev. B 81 (2010) 140403) who performed first-principles calculations using a LDA+U scheme. In this study, we suggest that the new state is a possible candidate to well explain the other data, e.g., strong anisotropy in spatial patterns measured by STM and magnetic excitations found by neutron scattering. Furthermore, we compare the result with other theoretical works reproducing similar low moment in terms of orbital ordering.

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