

**REITER'S WAVEFUNCTION OF THE POLARON  
IN THE  $t$ - $J$  MODEL WITH  $t_{2g}$  ORBITAL DEGENERACY**

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Recently, using self-consistent Born approximation (SCBA), we showed that a single hole introduced into the undoped ground state of an orbital  $t$ - $J$  model with  $t_{2g}$  orbital degeneracy is mobile [1]. This striking result contradicts the naive expectations which suggest that a hole should be trapped in this Ising-like ordered ground state. However, we demonstrated in Ref. [1] that the motion of a single hole is due to the frequently neglected three-site terms and showed that this new mechanism of hole movement is fundamentally different from the hole motion via quantum fluctuations in the standard spin  $t$ - $J$  model. Though, a more detailed understanding of this novel mechanism is needed. Hence, instead of considering the Green's function as in Ref. [1] we investigate the corresponding Reiter's wavefunction [2] calculated in the SCBA. In particular, we show how the number of orbitons associated with a hole motion depends on the superexchange parameter  $J$  and compare this result to the one obtained for the spin model.

[1] M. Daghofer *et al.*, Phys. Rev. Lett. **100**, 066403 (2008).

[2] G. F. Reiter, Phys. Rev. B **49**, 1536 (1994).

9.7 cm

13.4 cm

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