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# Tight-binding LMTO calculations on the stability of a new multiple spin density wave state in $\gamma$-Fe

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Abstract

The electronic structure calculations of the triple-$\boldsymbol{Q}$ spin density wave (3-$\boldsymbol{Q}$) state in $\gamma$-Fe, which has recently been found in the molecular-dynamics calculations, have been performed on the basis of the tight-binding LMTO Hamiltonian and the recursion method. It is demonstrated that the 3-$\boldsymbol{Q}$ state is more stable than the single $\boldsymbol{Q}$ ($Q = 0.6$) helical state which was found in the past calculations.