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Band Structures, Fermi Surface Topology and Superconductivity in $Na_xCoO_2 \cdot yH_2O$: Effects of the trigonal CoO_6 distortion MASAHITO MOCHIZUKI, MASAO OGATA, Department of Physics, University of Tokyo — In the recently discovered Co-oxide superconductor $Na_xCoO_2 \cdot yH_2O$, the edge-shared CoO_6 octahedra are trigonally contracted along the c-axis in the CoO_2-plane. We study how this CoO_6 distortion affects the magnetic properties and superconductivity in this compound by analyzing the multiorbital Hubbard model using the fluctuation-exchange approximation. It is shown that through generating the trigonal crystal field, the distortion pushes the Co e'_g bands up and consequently gives rise to the hole-pocket Fermi surfaces, which have been predicted in the band calculations. As the distortion increases, the hole pockets are enlarged and the ferromagnetic fluctuation as well as the pairing instability increases, which is in good agreement with recent NQR results.

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