Description of renormalization effect of multiband systems and its application within CMRA theory  JUN LIU, YONGXIN YAO, CHEN LIU, WENCAI LU\textsuperscript{1}, CAI-ZHUANG WANG, KAI-MING HO, Iowa State University — Many interesting physical phenomena, especially those observed in strongly correlated systems, incur a multiband description. A relatively accurate description of these systems is very important to clarify the origin of the observed physics. The recently proposed correlated matrix renormalization approximation (CMRA) introduces a new route to address this problem. As a variational approach, it makes use of possible renormalizations on the density matrix to correctly absorb effects resulting from strong electron-electron interactions. It performs quite well on different H systems. However, the generalization to multiband cases can be nontrivial. In this talk, I will discuss about how renormalization effects can be incorporated into the density matrix in the multiband case, and show the performance of the resulting CMRA on different dimer systems.

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