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Study of multiband disordered systems using the typical medium dynamical cluster approximation YI ZHANG, Louisiana State Univ - Baton Rouge, HANNA TERLETSKA, Ames Laboratory, CONRAD MOORE, CHINEDU EKUMA, KA MING TAM, JUANA MORENO, MARK JARRELL, Louisiana State Univ - Baton Rouge — We generalize the typical medium dynamical cluster approximation to disordered systems with multiple bands. Using our extended formalism, we perform a systematic study of the non-local correlation effects induced by disorder on the density of states and the mobility edge of the Anderson localized states. We apply our method to the three dimensional multiband Anderson model with both inter- and intra-band hopping and disorder potential and find fast convergence with increasing cluster size. Our results are consistent with the ones obtained by the transfer matrix and the kernel polynomial methods. Our findings show that the typical medium dynamical cluster approximation method can be used to study the Anderson localization in real materials.

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