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**On the X-ray-Problem in the Falicov-Kimball model in large dimensions at half-filling** GERD CZYCHOLL, FRITHJOF B. ANDERS, Department of Physics, Universität Bremen, P.O. Box 330 440, D-28334 Bremen, Germany — The f-electron spectral function of the Falicov-Kimball model is calculated within the dynamical mean-field theory using the numerical renormalization group method as the impurity solver. Both the Bethe lattice and the hypercubic lattice are considered at half filling. For small  $U$  we obtain a single-peaked f-electron spectral function, which –for zero temperature– exhibits an algebraic (X-ray) singularity ( $|\omega|^{-\alpha}$ ) for  $\omega \rightarrow 0$ . The characteristic exponent  $\alpha$  depends on the Coulomb (Hubbard) correlation  $U$ . This X-ray singularity cannot be observed when using alternative (Keldysh-based) many-body approaches. With increasing  $U$   $\alpha$  decreases and it vanishes for sufficiently large  $U$  when the f-electron spectral function develops a gap and a two-peak structure (metal-insulator transition).

Prefer Oral Session

Prefer Poster Session

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