

Abstract Submitted  
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**Disorder-induced pseudogap in the two-site Anderson-Hubbard model**<sup>1</sup> BILL ATKINSON, HONG-YI CHEN, RACHEL WORTIS, Trent University — Several recent exact diagonalization calculations have established that the disordered Hubbard (Anderson-Hubbard) model has a disorder-induced pseudogap or zero bias anomaly (ZBA) in the density of states. Motivated by these numerical results, we have studied the density of states of the two-site Anderson-Hubbard model, for which analytical results are possible. We find that, while strong correlations generally suppress valence fluctuations and lead to  $t^2/U$ -type corrections to the density of states, large valence fluctuations occur when the lower and upper Hubbard orbitals of neighboring sites are nearly degenerate. For these configurations, the level repulsion between many-body states, and therefore the width of the ZBA, is of order  $t$ .

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