

Abstract Submitted  
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**Effect of electron-electron interactions on density of states singularities found in the Anderson model**<sup>1</sup> RACHEL WORTIS, JAYANAYANA PERERA, Trent University — After Anderson first predicted localization in 1958, significant effort went into demonstrating that there is no singularity in the density of states associated with the mobility edge. It therefore came as a surprise when Johri and Bhatt[PRL **109** 076402 (2012)] recently uncovered the existence of a non-analyticity in the density of states near the band edge for systems with bounded disorder, in an energy range outside that captured by previous work. Moreover, they found that the singularity marks a transition to an energy range in which the DOS contributions come primarily from resonant states: states associated with clusters of sites of similar potential. While the work of Johri and Bhatt considers the traditional Anderson model without electron-electron interactions, there is currently significant interest in the effect of interactions on disordered systems. We therefore explore the effect a Hubbard  $U$  interaction on the DOS feature found by Johri and Bhatt. We find that the original singularity persists at low values of  $U$  but loses its sharpness at intermediate values, while new singularities associated with different types of resonance appear elsewhere in the spectrum.

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