

Abstract Submitted
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Optical Properties of LaVO₃ and YTiO₃ JOHN COULTER, EFS-TRATIOS MANOUSAKIS, Florida State University & NHMFL — Motivated by recent experimental efforts to fabricate p-n junctions from transition metal oxides (TMOs) and recent theoretical and computational work illustrating that strongly correlated insulators can produce more than one electron-hole pair from a single solar photon through impact ionization, we study the optical properties of LaVO₃ and YTiO₃ by *ab initio* methods. We apply the Bethe-Salpeter equations (BSE) to calculate the optical properties, starting from quasi-particle energy levels and states found at the level of the GW approximation. We present comparisons of the exciton binding energy to experimental data. We examine the extent to which these materials might be promising for efficient carrier multiplication, as has been shown previously in VO₂.

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