

Abstract Submitted  
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**Can an oxygen vacancy form a Kondo center at the LaAlO<sub>3</sub>/SrTiO<sub>3</sub> interface?**<sup>1</sup> MOHAMMAD SHERAFATI, BIRABAR NANDA, SASHI SATPATHY, University of Missouri — Recently a Kondo resistance minimum has been observed at the interface between LaAlO<sub>3</sub> and SrTiO<sub>3</sub>[1]. It has been suggested that the effect is due to the scattering of interface electrons from magnetic centers just like in the original Kondo effect; however, the origin of such magnetic centers is not understood. In this work, we evaluate the idea of whether an oxygen vacancy in SrTiO<sub>3</sub> might produce a magnetic center. We focus on an isolated vacancy in bulk SrTiO<sub>3</sub> from density-functional calculations and provide evidence that of the two electrons released to the system by the oxygen vacancy, one becomes localized near the vacancy site, while the other forms a delocalized state. The results suggest that the localized electron could form a Kondo center resulting in a resistance minimum as observed in the experiments.

[1] A. Brinkman *et al.*, Nature Mater. **6** 493 (2007).

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