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Band offsets between $SrTiO_3$ and $LaAlO_3$ KRISTOPHER E. ANDERSEN, Northern Arizona University, C. STEPHEN HELLBERG, Naval Research Laboratory — Although separately $SrTiO_3$ and $LaAlO_3$ are both band insulators, together a highly mobile, quasi-2D electron gas can form at their interface. Several mechanisms have been proposed to produce this electron gas, including the electrostatic divergence within $LaAlO_3$. A critical property in understanding this divergence is the valence band offset between $SrTiO_3$ and $LaAlO_3$. However, because the electrostatic potential can diverge, it is not clear *where* the valence band offset should be defined; an issue that may affect experimental band offset measurements. In this talk, the band offsets between $SrTiO_3$ and $LaAlO_3$ are presented within the framework of density functional theory. Both the layer projected density of states and macroscopically averaged potential are used to find the valence band offset for thin films and multilayers.

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