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**Trends in $(LaMnO_3)_n/(SrTiO_3)_m$ superlattices with varying layer thicknesses**[1] JILILI JIWUER, FABRIZIO COSSU, UDO SCHWINGENSCHLÖGL, KAUST, PSE Division, Thuwal 23955-6900, Kingdom of Saudi Arabia — We investigate the thickness dependence of the structural, electronic, and magnetic properties of $(LaMnO_3)_n/(SrTiO_3)_m$ ($n$, $m$ = 2, 4, 6, 8) superlattices using density functional theory. The structure relaxation turns out to be highly sensitive to the onsite Coulomb interaction. In contrast to bulk $SrTiO_3$, strongly distorted O octahedra are observed in the $SrTiO_3$ layers with a systematic off centering of the Ti atoms. The systems favour ferromagnetic spin ordering rather than the antiferromagnetic spin ordering of bulk $LaMnO_3$ and all show half-metallicity, while a systematic reduction of the minority spin band gaps as a function of the $LaMnO_3$ and $SrTiO_3$ layer thicknesses originates from modifications of the Ti $d_{xy}$ states.

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