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Structure, strain, and control of ground state property in $\text{LaTiO}_3/\text{LaAlO}_3$ superlattice ALEX TAEKYUNG LEE, MYUNG JOON HAN, Department of Physics, KAIST — We examined the ground state property of $\text{LaTiO}_3/\text{LaAlO}_3$ superlattice through density functional band calculations. Total energy calculations, including the structural distortions, U dependence, and the exchange correlation functional dependence, clearly showed that the spin and orbital ground state can be controlled systematically by the epitaxial strain. In the wide range of strain, the ferromagnetic-spin and antiferro-orbital order are stabilized, which is notably different from the previously reported ground state in the titanate systems. By applying +2.8% of tensile strains, we showed that the antiferromagnetic-spin and ferro-orbital ordered phase become stabilized.

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