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**Electronic and Magnetic Properties of Ultrathin SrRuO<sub>3</sub> (111) Film on SrTiO<sub>3</sub>** BONGJAE KIM, B.I. MIN, POSTECH — We have investigated electronic and magnetic properties of ultrathin SrRuO<sub>3</sub> (SRO) film grown on (111) SrTiO<sub>3</sub> substrate using the *ab initio* electronic structure calculations. Ru-terminated SRO (111) film suffers from strong surface atomic relaxations, while SrO<sub>3</sub>-terminated one preserves the surface structure of ideal perovskites. Both Ru- and SrO<sub>3</sub>-terminated SRO (111) film show unexpected interlayer antiferromagnetic (AFM) structure at the surface, but with different characters and mechanisms. The AFM structure for the former results from the large surface atomic relaxation, whereas that for the latter results from the truncated film effect. Interestingly, for the SrO<sub>3</sub>-termination case, the half-metallic nature emerges despite the interlayer AFM structure.

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