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Surface Broken Symmetry on Orthorhombic Double-layer $\mathbf{Sr_3(Ru_{1-x}Mn_x)_2O_7}$[1] CHEN CHEN, Louisiana State University, V. B. NASCIMENTO, Departamento de Fsica, ICEx-UFMG, ZHENYU DIAO, JIANDI ZHANG, RONGYING JIN, E. W. PLUMMER, Louisiana State University — The surface of double-layered ruthenate $Sr_3Ru_2O_7$ exhibits octahedra tilt distortion and an enhanced rotational distortion caused by the broken symmetry. Previous LEED IV calculation reveals that the tilt angle is (2.51.7)at 80 K (B. Hu *et. al.*, Physical Review B 81, 184104 (2010)). A glideline symmetry and a mirror symmetry along this direction are both broken. Results from LEED IV simulations show that both broken symmetries originate from the emergence of surface tilt. The degree of broken symmetry is more sensitive to the tilt angle, thus producing a smaller error than from conventional LEED IV calculation. When Mn doping is induced into the compound, the tilt is removed and the symmetry of the LEED pattern returns to what is expected for rotation, two glide planes and four-fold symmetry.

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