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Chiral orbital angular momentum perspective on surface electronic states of SrTiO3 and KTaO3[1] KYEONG TAE KANG, PANJIN KIM, JUNG HOON HAN, SungKyunKwan University, Suwon, South Korea — Tight-binding models suitable for the recently observed surface electronic bands of $SrTiO_3$ and $KTaO_3$ are analyzed with a view to bringing out the relevance of chiral orbital angular momentum (OAM) structure in the t_{2g}-derived bands. With the inversion symmetry breaking at the surface, orbital chiralities of the three bands (neglecting spin splitting) are $m = +1, 0, -1$. Further inclusion of spin-orbit interaction induces linear Rashba splitting on the chiral OAM bands, but not in the non-chiral, $m = 0$ band structure. Our predictions can be easily verified by circular dichroism ARPES experiment.

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