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【607】 Electronic structure of buried LaNiO₃ layers in (111)-oriented LaNiO₃/LaMnO₃ superlattices probed by soft x-ray ARPES

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Taking advantage of the large electron escape depth of soft x-ray angle resolved photoemission spectroscopy we report measurements of the electronic structure of (111)-oriented [LaNiO₃/LaMnO₃] superlattices and LaNiO₃ epitaxial thin films. For thin films we observe a 3D Fermi surface with an electron pocket at the Brillouin zone center and hole pockets at the zone vertices. Superlattices with thick nickelate layers present a similar electronic structure. However, as the thickness of the LaNiO₃ is reduced to 7 monolayers the superlattices become insulating. These heterostructures do not show a marked redistribution of spectral weight in momentum space but exhibit a pseudogap of ≈ 50 meV. [APL Materials 5, 016101 (2017)]

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