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【623】A laser-ARPES study of LaNiO3 thin films grown in-situ by sputter deposition

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Thin films of the transition-metal oxide $LaNiO_3$ (LNO) undergo a metal-insulator transition when their thickness is reduced to 2-3 unit cells. Here, we use a state-of-the-art laser-ARPES setup to map the electronic structure of LNO thin films with improved resolution. A series of high-quality films of thicknesses ranging from 19 to 2 unit cells is grown by sputter deposition and transferred in vacuo to the ARPES setup. Our measurements show an unchanged Fermi surface for all metallic samples. However, the peak width of the momentum distribution curve at the Fermi level progressively increases as the thickness is reduced. This suggests that the metal-insulator transition is driven by the increasing importance of interfacial scattering and a reduced inelastic mean free path.

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