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Observation of strain-controlled electronic modulations revealed by Fermi surface superstructures in strongly correlated $LaNiO_3$ films HYANGKEUN YOO, CCES, IBS & Seoul Natl Univ, SEUNGILL HYUN, Pohang Univ of Science and Technology, LUCA MORESCHINI, Advanced Light Source, HYEONG-DO KIM, CCES, IBS & Seoul Natl Univ, YOUNGJUN CHANG, Univ of Seoul, CHANGHEE SOHN, DAWOON JEONG, SOOBIN SINN, YONGSU KIM, CCES, IBS & Seoul Natl Univ, AARON BOSTWICK, ELI ROTENBERG, Advanced Light Source, JIHOON SHIM, Pohang Univ of Science and Technology, TAEWON NOH, CCES, IBS & Seoul Natl Univ — Control over the electronic properties of strongly correlated electron systems can be achieved by exploiting the misfit strain that exists in epitaxial films on lattice mismatched substrates. Here, we report a systematic investigation of electronic structures in strongly correlated $LaNiO_3$ films under different strain states, using *in situ* angle-resolved photoemission spectroscopy and the dynamical mean field theory. $LaNiO_3$ film shows a change of a Fermi surface (FS) topology, driven by interplay between strong electron-electron correlations and misfit strain effects. Additionally, different from compressive strain case, a FS with tensile strain has a large flat region to induce strong FS nesting. As a result, different FS superstructures are observed in the compressive and tensile strain cases, and their origins are attributed to charge disproportionation and spin density waves, respectively. The more details will be discussed in the presentation.

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