Abstract Submitted
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Pseudo-gaps at the Mott quantum critical point in the perovskite rare earth nickelates[1] S. JAMES ALLEN, Univ of California - Santa Barbara, ADAM HAUSER, EVGENY MIKHEEV, UC Santa Barbara, ANKIT DISA, FRED WALKER, Yale University, NELSON MORENO, UC Santa Barbara, CHARLES AHN, Yale University, LEON BALENTS, SUSANNE STEMMER, SUSANNE STEMMER, UC Santa Barbara — We explore the behavior of the pseudogap in the vicinity of the quantum critical point of charge transfer Mott insulators. We focus on NdNiO3 and LaNiO3, which as bulk material bracket the quantum critical point, but tune the nature of the transition in epitaxial ultra-thin films by substrate strain, film thickness and Nd/LaNiO3 composition. We expand our earlier work [1] that documented the energy gaps and pseudo gaps in thick films using tunneling spectroscopy between Al and nickelate films with 1nm Al2O3 barriers. We focus on the relative importance of disorder scattering and electron correlation in the pseudogaps.

[1] "Gaps and pseudo-gaps at the Mott quantum critical point in the perovskite rare earth nickelates," S. James Allen, Adam J. Hauser, Evgeny Mikheev, Susanne Stemmer et al., arXiv:1404.2544.

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