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Non-Gaussian resistance noise across the metal-insulator transition in epitaxial NdNiO3 films ALI ALSAQQA, SUJAY SINGH, State Univ of NY - Buffalo, SRIMANTA MIDDEY, MICHAEL KAREEV, JAK CHAKHALIAN, University of Arkansas - Fayetteville, G. SAMBANDAMURTHY, State Univ of NY - Buffalo — The rich phase diagrams exhibited by strongly correlated rare earth nickelates provide a great playground to investigate the electronic, magnetic and structural properties using a variety of experimental tools. $NdNiO_3$ thin films exhibit a temperature-driven metal-insulator transition (MIT) and the transition temperature is controlled by the interface strain. We present results from transport measurements and noise spectroscopy studies in strained, ultrathin (15 unit cells) $NdNiO_3$ films across the MIT. Resistance noise spectroscopy (in the frequency range below 10 Hz) is a powerful tool to statistically investigate the fluctuations of the microscopic scatterers that can dramatically affect macroscopic properties. In our samples, we find that the noise spectrum follows a 1/f behavior, however the noise magnitude dramatically changes across the MIT. We observe that the noise magnitude is Gaussian in the metallic phase and turns non-Gaussian in the insulating phase suggesting the importance of non-uniform scatterers. The individual roles of percolation events and/or correlation effects arising from closing of the charge transfer gap in the manifestation of noise behavior will be discussed. Results from both thermal-driven and electric field-driven transitions will be presented.

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