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Low-energy dispersion of dynamic charge stripes in $La_{1.75}Sr_{0.25}NiO_4$ observed with inelastic neutron scattering[1] RUIDAN ZHONG, JOHN TRANQUADA, GENDA GU, Brookhaven Natl Lab, DMITRY REZNIK, University of Colorado, BARRY WINN, Oak Ridge Natl Lab — The dynamic stripe correlations have been the subject of intense research, owing to the possible links with high-T_c superconductivity. In light of a recently published, direct observation of charge-stripe fluctuations in $La_{2-x}Sr_xNiO_4$ using inelastic neutron scattering[2], we did a follow-up neutron experiment on a x=0.25 sample to characterize the low-energy dispersion of these dynamic charge stripes using the HYSPEC instrument at the Spallation Neutron Source. The scattering signals are collected in the vicinity of a charge-order peak with a large wave vector (4.4, 3, 0), where dynamic spin-stripe correlations are negligible. Mapping the low-energy charge-stripe fluctuations in a wide temperature range, we observe a finite dispersion along the stripe-modulation direction at T$\geq$160K where the charge stripes become disordered, while the steep dispersion in the orthogonal direction is not resolved.

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[2]S. Anissimova, *et al.*, Nat. Commun. 5, 3467 (2014)

Ruidan Zhong
Brookhaven Natl Lab

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