

Abstract Submitted
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Luttinger Liquid Kink TRINANJAN DATTA, ERICA W. CARLSON, JIANGPING HU, Purdue University — We consider a spin rotation invariant Luttinger Liquid at finite temperature and show the existence of a kink in the effective dispersion, as determined by the frequency-dependent peak in the momentum distribution curve (MDC). The MDC is defined by considering the single hole spectral function $A^<(\vec{k}, \omega)$ as a function of \vec{k} at a fixed frequency ω . When the charge velocity is greater than the spin velocity, $v_c > v_s$, the high frequency dispersion is linear in \vec{k} and follows v_c , while the low frequency dispersion (which is also linear in \vec{k}) follows some average of the two velocities. The energy scale of the crossover between the two velocities defines a kink, E_{kink} . Since the Luttinger Liquid is quantum critical, E_{kink} scales with the temperature. The kink energy is also affected by the interaction strength, and the strength of the kink is controlled by the ratio of the spin and charge velocities.

Trinanjana Datta
Purdue University

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