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Phenomenological theory of the underdoped phase of a high-T_c superconductor[1] ALEXEI TSVELIK, Brookhaven National Laboratory, ANDREY CHUBUKOV, University of Wisconsin, Madison — We model the Fermi surface of the cuprates by one-dimensional nested parts near $(0, \pi)$ and $(\pi, 0)$ and unnested parts near the zone diagonals. Fermions in the nested regions form 1D spin liquids, and develop spectral gaps below some $\sim T^*$, but superconducting order is prevented by 1D phase fluctuations. We show that the Josephson coupling between order parameters at $(0, \pi)$ and $(\pi, 0)$ locks their relative phase at a crossover scale $T^{**} < T^*$. Below T^{**}, the system response becomes two-dimensional, and the system displays Nernst effect. The remaining total phase gets locked at $T_c < T^{**}$, at which the system develops a (quasi-) long-range superconducting order.

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