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Competition between pseudogap phase and d-wave superconductivity in the limit of large number of coupled 1D chains ENRICO PERFETTO, University of Milan Bicocca, JOSE GONZALEZ, CSIC, Madrid — We study the electronic instabilities in a quasi-one-dimensional Hubbard model formed by a large array of Hubbard chains. We go beyond the renormalization group solution of the model, by incorporating the nonperturbative bosonization method for the analysis of the quasiparticle properties. We show that when the Fermi level is at the Van Hove singularity the anomalous electron dimension diverges at the Fermi points closer to the saddle points of the 2D dispersion. Such divergence competes with the d-wave superconducting instability, but the suppression of the quasiparticle weight around the hot spots at $(\pi,0)$ and $(0,\pi)$ takes place first. This behaviour survives when the number of coupled chains becomes large, suggesting that the development of the pseudogap should survive in the 2D limit.

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