

## Dimensional crossover in weakly-coupled chains

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We study the dimensional crossover from one dimension (1D) to quasi-1D that occurs, as a function of temperature, if we weakly couple 1D chains made of interacting particles, bosons or fermions. If temperature is too high, the effect of a small transverse coupling is washed out, meanwhile, for small temperatures, it affects the system. The situation is enriched by the presence of interactions and by meaning of Tomonaga-Luttinger theory we completely describe the low-energy excitations of any 1D interacting system. Moreover, we also consider a Renormalization group approach to address the interplay of interactions and the small inter-chain coupling.