



Luttinger liquid in presence of a bath
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In one dimension interactions lead to a physics dominated by interactions. One of the cornerstones to describe such physics is provided by the Luttinger liquid theory, equivalent in one dimension of the Fermi liquid for the higher dimensional systems. A very interesting question is to understand what happens when such a Luttinger liquid is coupled to a dissipative environment, and how the Luttinger liquid physics is modified by the presence of such a bath. Such a situation is relevant for several experimental situations such as coupled one dimensional chains, ions in cold atomic systems subjected to microwave noise, and, an example that will be examined in details, the case of a superconducting wire coupled to a dirty metallic gate. In the later case the presence of the metallic gate is expected to reinforce the superconductivity in the one dimensional wire.