

Abstract Submitted
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Luttinger Liquids coupled to Quantum Impurities; Exact Solutions via Bethe Ansatz COLIN RYLANDS, NATAN ANDREI, Rutgers Univ — The Bethe ansatz method has been hugely successful in finding exact solutions of quantum impurity systems, the Kondo model and Anderson model to name but two. Up till now such solutions have been restricted to models where the bulk is non-interacting or the impurity is located on the boundary. It is known, however that placing impurities in a Luttinger liquid can have different and remarkable consequences. A backscattering impurity (Kane-Fisher model) will cause the system to be cut in two at low temperature for repulsive interactions or completely healed if the interactions are attractive. Coupling instead a dynamic impurity like a resonance level modifies this picture so that even attractive interactions can result in the system being split. Such systems can be realised experimentally, in edge states of quantum Hall systems or quantum dots attached to one dimensional leads. In this talk I will describe how to solve models which couple a Luttinger liquid to an impurity in the bulk via Bethe ansatz. Along the way I will exhibit the solutions of the Kane-Fisher model as well as a Luttinger liquid coupled to a resonance level.

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