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'Consistent bosonization-debosonization': A resolution of the non-equilibrium transport puzzle blazes a new path forward

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In this talk, we will critically reexamine the bosonization-debosonization procedure for systems including certain types of localized features (although more general scenarios are possible). By focusing on the case of a tunneling junction out of equilibrium, I will show that the conventional approach gives results that are not consistent with the exact solution of the problem even at the qualitative level and highlight the inconsistencies that can adversely affect the results of all types of calculations. I will subsequently report on a 'Consistent bosonization-debosonization procedure that we have developed to resolve the aforementioned non-equilibrium transport puzzle and argue that this framework should be widely applicable [1]. I will touch upon its application for the two-lead Kondo problem [2] that besides being a key theoretical prototype of a strongly correlated system is also of immediate experimental relevance in many ways (see also related talk by Bolech). [1] Nayana Shah,C. J. Bolech, arXiv:1508.03078, [2] C. J. Bolech, Nayana Shah, arXiv:1508.03079