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Local density of states in Luttinger liquids with a dynamically-generated spin gap DIRK SCHURICHT, The Rudolf Peierls Centre for Theoretical Physics, University of Oxford, UK, AKBAR JAEFARI, University of Illinois at Urbana-Champaign, FABIAN ESSLER, The Rudolf Peierls Centre for Theoretical Physics, University of Oxford, UK, EDUARDO FRADKIN, University of Illinois at Urbana-Champaign — We present a theory of STM spectroscopy in semi-infinite 1D strongly correlated electron systems with a spin-gap. We calculate the local density of states of semi-infinite Luttinger liquids with open boundary conditions and a dynamically generated spin gap at zero temperature. In order to perform this calculation, we use the boundary state formalism [1] together with a form factor expansion in the infinite system. We find explicit expressions for the local density of states as a function of the gap size and the distance from the boundary. We show how a local spectroscopic probe of this type can be used a)to detect the spectrum of fractionalized massive solitons and their dynamics, b)the existence of boundary states and c)charge order induced by the boundary. We will discuss the relevance of this work to STM experiments in 1D systems and in quasi-1D systems used to model stripe phases in strongly correlated systems [2]. [1] S. Ghoshal and A. Zamolodchikov, *Int. J. Mod. Phys.* 9, 3841(1994), *ibid.* 9, E4353(1994). [2] S. A. Kivelson, I. P. Bindloss, E. Fradkin, V. Oganesyan, J. Tranquada, A. Kapitulnik and C. Howald, *Rev. Mod. Phys.* 75, 1201(2003).

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