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NMR Response in Antiferromagnetic Spin-1/2 Chains JESKO SIRKER, Max-Planck Institute for Solid State Research, NICOLAS LAFLORENCIE, CNRS - LPS Orsay — Non-magnetic impurities break a quantum spin chain into finite segments and induce Friedel-like oscillations in the local susceptibility near the edges. The signature of these oscillations has been observed in Knight shift experiments on the high-temperature superconductor $\text{YBa}_2\text{Cu}_3\text{O}_{6.5}$ and on the spin-chain compound Sr_2CuO_3 . Here we analytically calculate NMR spectra, compare with the experimental data, and give a simple criterion to determine the impurity concentration. Our results are based on a parameter-free formula for the local susceptibility of a finite spin chain obtained by bosonization which is checked by comparing with quantum Monte Carlo calculations.

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