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NMR relaxation rate in quasi one-dimensional antiferromagnets SYLVAIN CAPPONI, Toulouse university and Boston university, MAXIME DUPONT, Toulouse university, NICOLAS LAFLORENCIE, Toulouse university and CNRS, PINAKI SENGUPTA, Nanyang Technological University, HUI SHAO, ANDERS W. SANDVIK, Boston university — We compare results of different numerical approaches to compute the NMR relaxation rate $1/T_1$ in quasi one-dimensional (1d) antiferromagnets. In the purely 1d regime, recent numerical simulations using DMRG have provided the full crossover behavior from classical regime at high temperature to universal Tomonaga-Luttinger liquid at low-energy (in the gapless case) or activated behavior (in the gapped case). [1] For quasi 1d models, we can use mean-field approaches to reduce the problem to a 1d one that can be studied using DMRG. But in some cases, we can also simulate the full microscopic model using quantum Monte-Carlo techniques. This allows to compute dynamical correlations in imaginary time and we will discuss recent advances to perform stochastic analytic continuation to get real frequency spectra. Finally, we connect our results to experiments on various quasi 1d materials.

[1]M. Dupont, S. Capponi, N. Laflorencie, Phys. Rev. B **94**, 144409 (2016).

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