

Many-Body Localization in Infinite Chains

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I will present some of our results on many-body localization (MBL) in infinite spin chains with binary potential disorder. I will discuss characteristics of the MBL phase as well as the phase diagram as a function of exchange anisotropy and disorder strength. I will finish my talk by presenting and analyzing the conjecture that localization or quasi localization can also occur in interacting translationally invariant systems where a disorder potential is created dynamically.¹⁻³

¹ F. Andraschko, T. Enss, and J. Sirker, *Purification and many-body localization in cold atomic gases*, Physical Review Letters, **113**, 217201, (2014).

² T. Enss, F. Andraschko, and J. Sirker, *Many-body localization in infinite chains*, Physical Review B, **95**, 045121 (2017).

³ J. Sirker, *Does a distinct quasi many-body localized phase exist? A numerical study of a translationally invariant system in the thermodynamic limit*, arXiv:1805.08258 (2018).