Quasi-Adiabatic Continuation: A Tool for Quantum Many-Body Systems

MATTHEW HASTINGS
Microsoft Research

Abstract. I will explain the technique of quasi-adiabatic continuation, a powerful tool for understanding quantum many-body systems with local interactions and a spectral gap. This tool was introduced in my 2003 proof of the higher-dimensional Lieb–Schultz–Mattis theorem and generalized in my 2005 work with Xiao-Gang Wen. Since then, it has been applied to several problems. I will discuss some of these applications, including a proof of Hall conductance quantization for a many-body system without averaging assumption.