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Spectral mapping techniques in quantum walks

Abstract

A spectral mapping theorem for a discrete time quantum walk on a finite graph is proved by Higuchi, Konno, Sato and Segawa in 2014. After that Higuchi, Segawa and S. extended the result to a more general situation. In this talk, we give some application examples of the generalized one. First we consider the spectrum of a quantum walk on an infinite graph. Second we solve an eigenvalue problem for an anisotropic quantum walk. Finally we study the spectrum of a one-defect quantum walk, where we use not only the spectral mapping theorem but also the Feshbach map.