Spectral gap for the SSEP on trees and "higher-spin trees"

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Abstract

We consider the gap in the Markov generator of a symmetric, simple exclusion process on a finite, connected graph. An important conjecture is that the gap of the SSEP equals the gap of the corresponding random walk. With Bruno Nachtergaele and Wolfgang Spitzer, we proved the conjecture for finite trees. With Nachtergaele, we have generalized to "higher-spin trees". This is the first step in a much deeper result, which we have proved. But this already has interesting applications.