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A tale of Pfaffian persistence tails told by a Bonnet-Painlevé VI transcendent

Abstract

We identify the persistence probability for the zero-temperature nonequilibrium Glauber dynamics of the half-space Ising chain as a particular Painlevé VI transcendent, with monodromy exponents $(1/2, 1/2, 0, 0)$. Among other things, this characterization à la Tracy-Widom permits to relate our specific Bonnet-Painlevé VI to the one found by Jimbo & Miwa and characterizing the diagonal correlation functions for the planar static Ising model. In particular, in terms of the standard critical exponents $\eta=1/4$ and $\beta=1/8$ for the latter, this implies that the probability that the limiting Gaussian real Kac's polynomial has no real root decays with an exponent $4(\eta+\beta)=3/4$.