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Analytic limit shapes for the 5 vertex model

This is joint work with Jan de Gier and Sam Watson. The Bethe Ansatz is a very old technique but using some new tools inspired by conformal invariance we can make progress on both the limit shape phenomenon and fluctuations for models beyond free fermionic models. In particular using the Bethe Ansatz we find an explicit expression for the free energy of the five vertex model. The resulting Euler-Lagrange equation can be reduced to an equation generalizing the complex Burgers' equation. We show how to solve this equation, giving analytic parameterizations for limit shapes.