1

Results

method	β
power law fit of $m(t = 0, \chi) \sim \xi(\chi)^{\beta}$, and varying which data points to use. $\chi \in \{8, \ldots, 112\}$.	0.124999
best fit (polynomial fit of order 5) of κ and β in a data collapse with $\xi(\chi) \sim \chi^{\kappa}$. $\Delta t = 0.001$. $\chi \in \{12, 20, \ldots, 60\}$.	0.12467 ($\kappa = 1.9256$)
best fit (polynomial fit of order 5) of β in a data collapse with $\xi(\chi)$ from row-to-row transfer matrix. $\Delta t = 0.001$. $\chi \in \{12, 20, \ldots, 60\}$.	0.12461

By fitting a power law

$$\xi(\chi) \sim \chi^{\kappa}$$

to the correlation length given by the transfer matrix at T_{crit}, I find

$$\kappa \approx 1.9$$

For the fitness of the data collapse, I use the percentual norm of residuals of a polynomial fit of order 5 through all data points.

Another option that I tried was the percentual mean-squared error between the interpolations of data points of lower χ and the data points of the highest value of χ. Both options are suggested in [2].

A generalization of the latter option is presented in [1]. Here, the fitness is judged not only relative to the highest value of χ, but relative to all values of χ with equal weight.

Bibliography

[1] Somendra M Bhattacharjee and Flavio Seno. “A measure of data collapse for scaling”. In: *Journal of Physics A: Mathematical and General* 34.33 (2001), p. 6375.

[2] Anders W Sandvik, Adolfo Avella, and Ferdinando Mancini. “Computational studies of quantum spin systems”. In: *AIP Conference Proceedings*. Vol. 1297. 1. AIP. 2010. Chap. 3, pp. 135–338.