

AD_Excitation

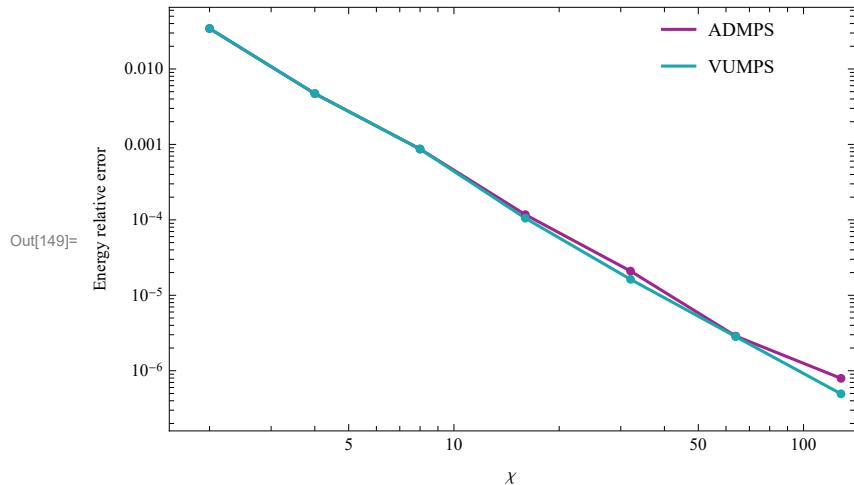
1D ground state

useful function

Heisenberg

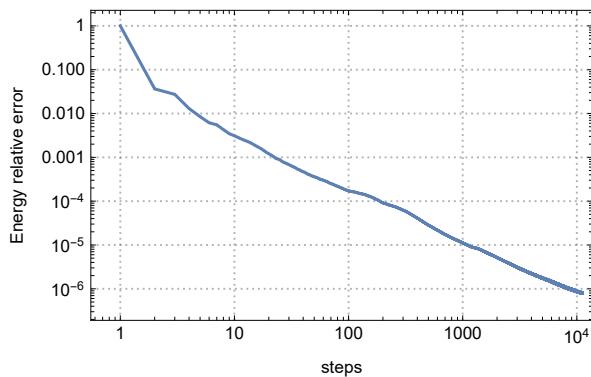
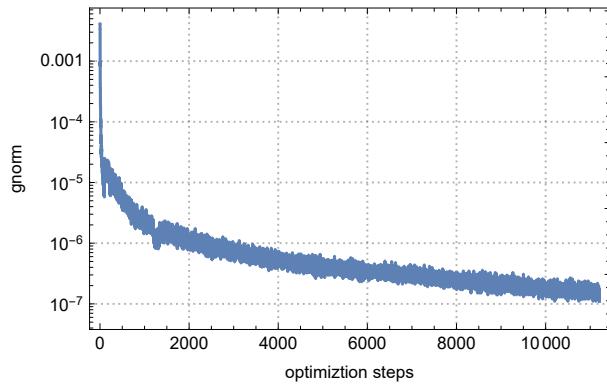
relative error- χ

error exponentially-dependent on χ



relative error-steps

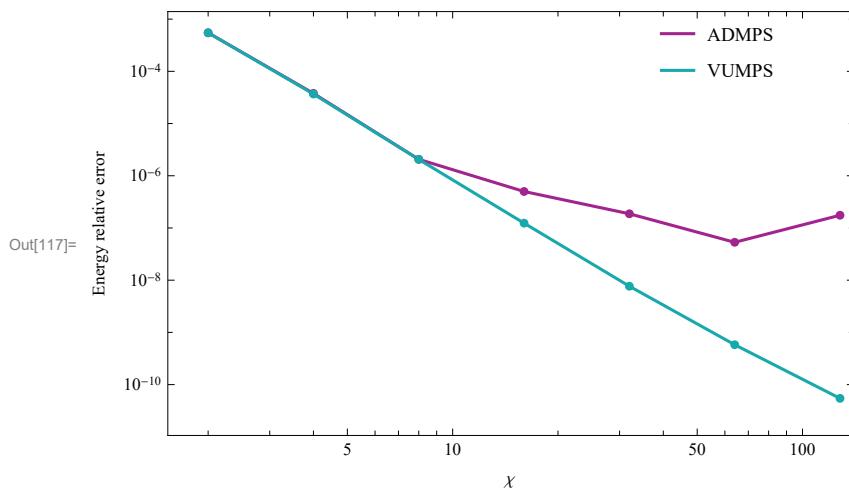
error exponentially-dependent on steps

E-steps $\chi=128$ Out[$\#$]=gnrom-steps $\chi=128$ 

TFIsing at critical point $g=0.5$

relative error- χ

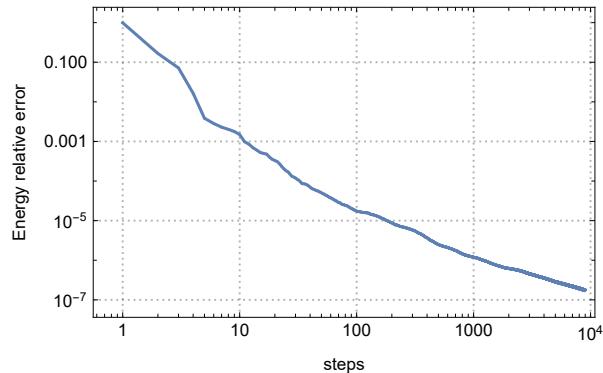
error exponentially-dependent on χ



relative error-steps

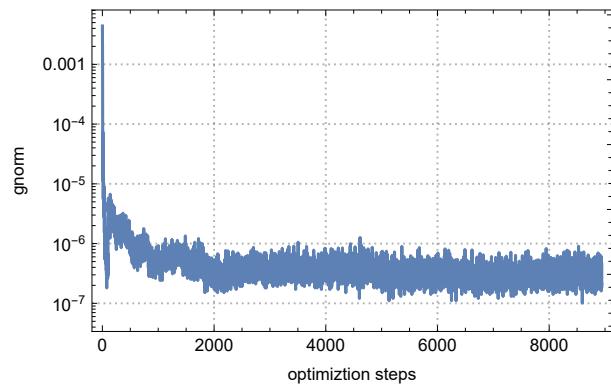
error exponentially-dependent on steps

E-steps $\chi=128$



Out[$\#$]=

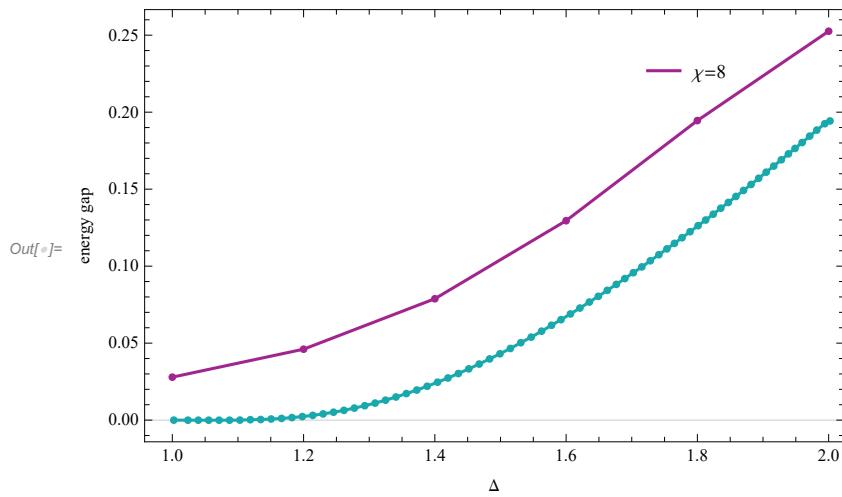
gnorm-steps $\chi=128$



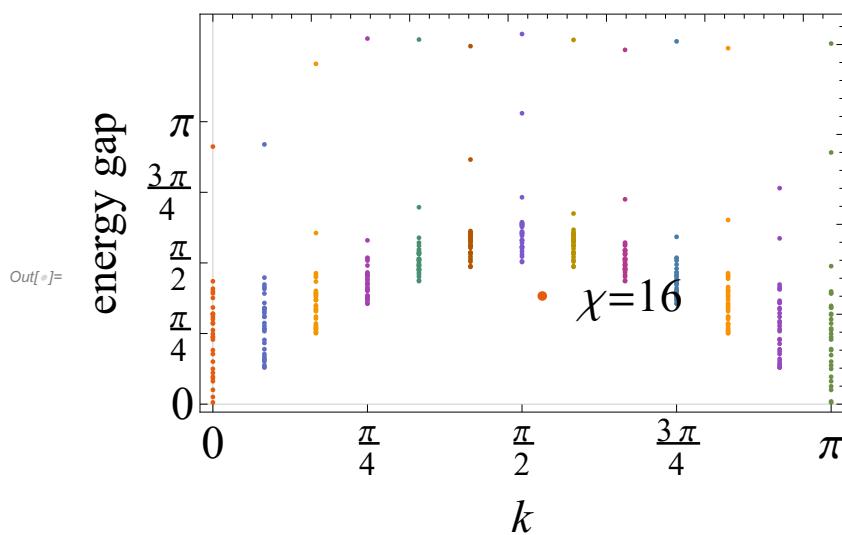
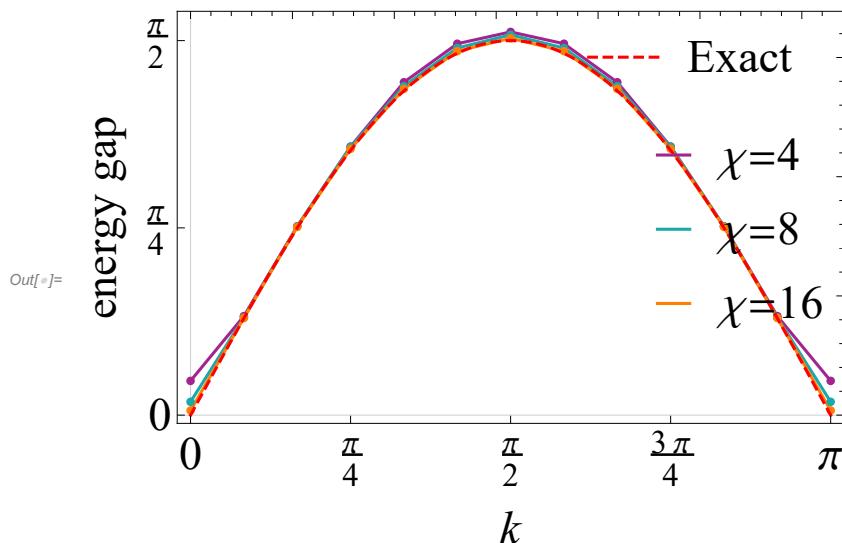
1D Excitation

U1

XXZ $\Delta=1$

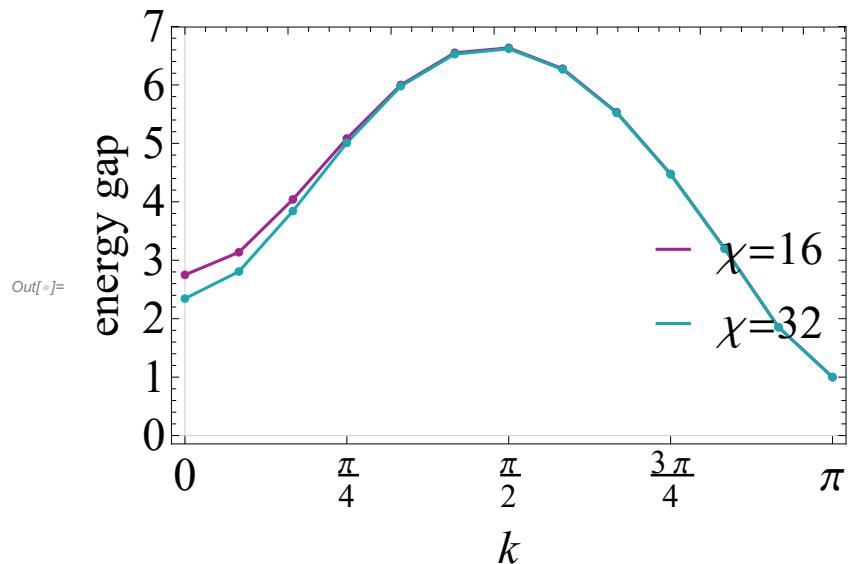


Heisenberg S=1/2

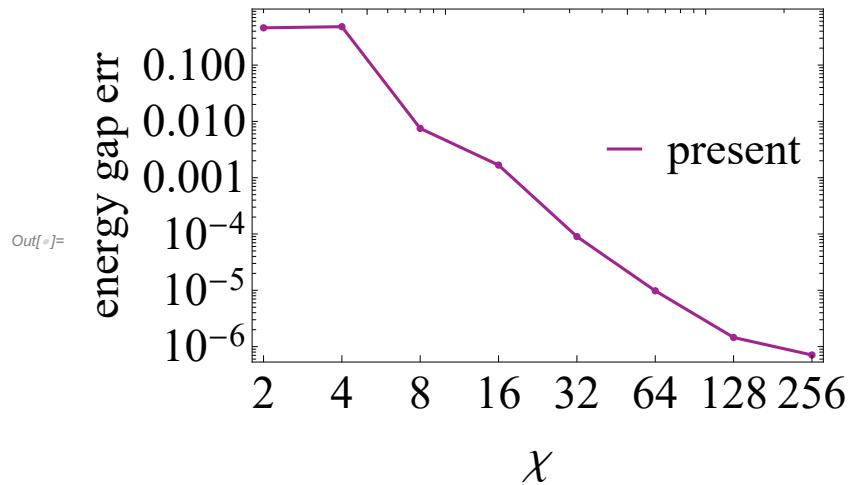


Heisenberg S=1

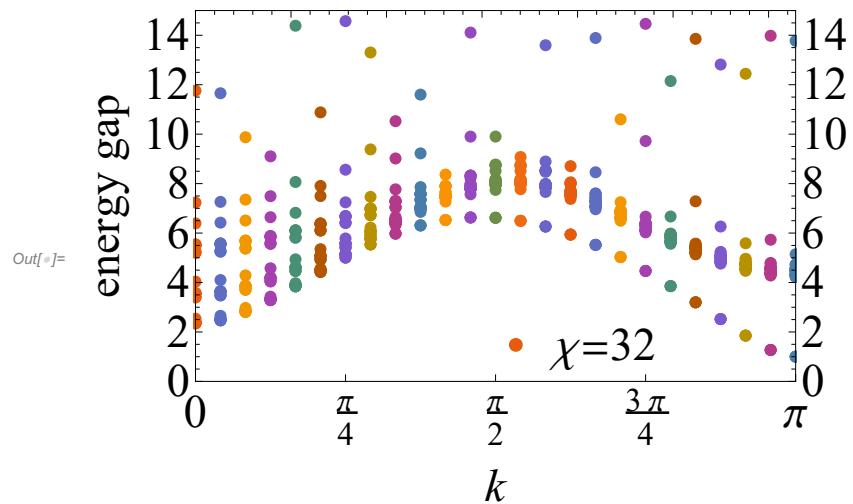
energy gap err



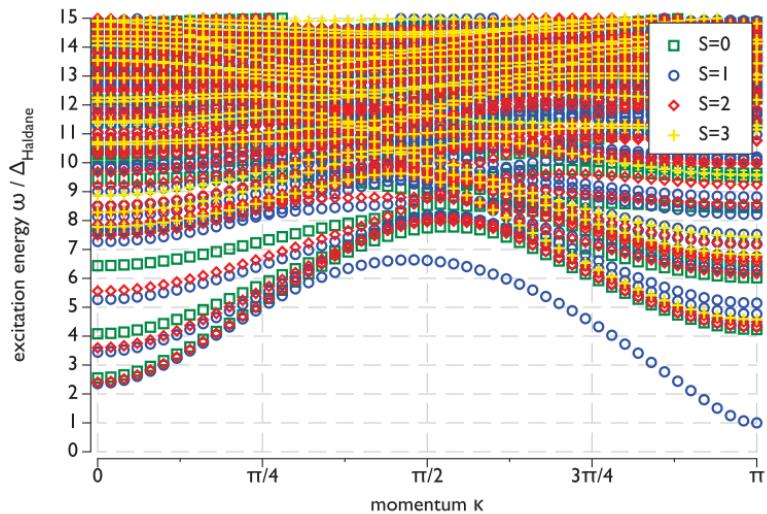
$k = \pi$ energy gap error



excitation spectrum



PHYSICAL REVIEW B 85, 100408(R) (2012) Fig.3



TFIsing

