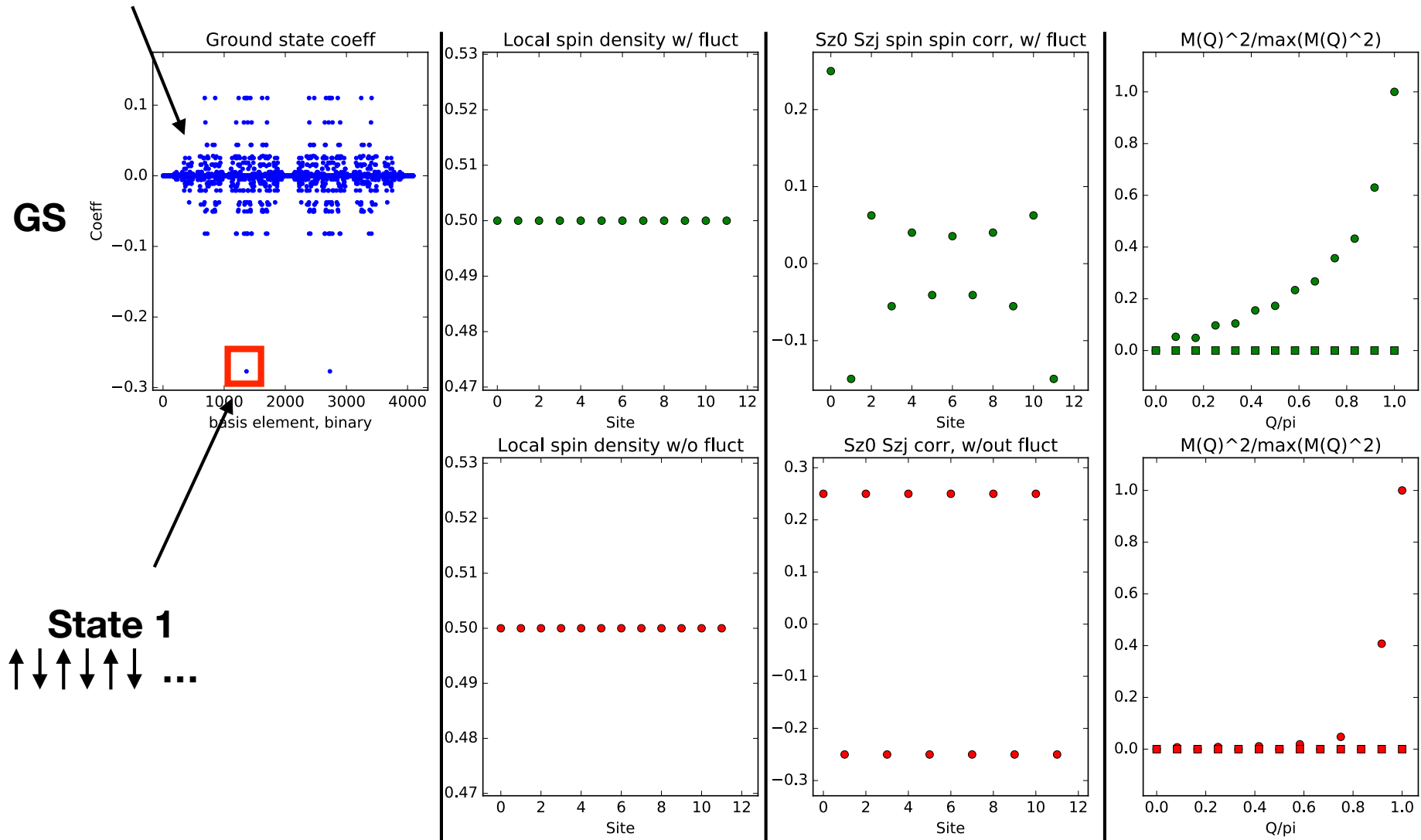


Fluctuations

ED results for 12 site AFM chain (w/ PBC)



Fluctuations are suppressed as $N \rightarrow \infty$

There are local moments for both, need to use the local spin operator $|S_z|$.

GS corr decays in space, State 1 corr doesn't. Both oscillate in sign

Both order parameters max at Neél wavevector. Weight is heavier for State 1 than GS.

Conclusion: Both GS and State 1 have long range Neél order
Naming convention: GS = "GS has Neél order", State 1 = "Neél state"