Stefan Boettcher:

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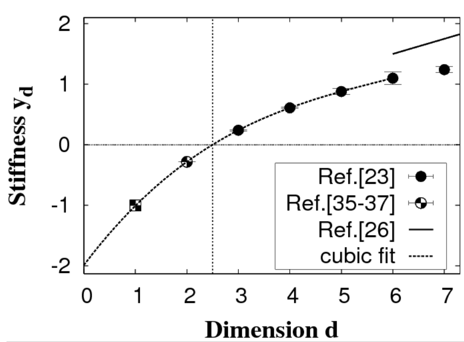
Research on Spin Glasses:

While theories for mean-field spin glass are well-developed, their
finite-dimensional spin glasses is still in question. For many years
verifying those theories using simulations have been hampered by
inherent to the task: Just finding a ground state is an NP-hard prol
the class of the most difficult computational problems known. Th
and pioneering research area at the interface of statistical physics
science, spawning interest in New Optimization Algorithms in Ph
many areas of science are driven by rapidly improving hardware,
of strongly disordered systems also requires the development of s
methods and algorithms that may anticipate the fate of computatio
beyond Moore's Law.



Fitting the stiffness exponent for $d=2,\ldots,7$ of the Edwards-Anderson model predicts a lower critical dimension (=zero of fit) at $d_l=5/2$ to within 0.1%.

We have pioneered several
glasses, in particular, the E
here). By focusing on *dilut*
succeeded to improve the a
3-dimensional spin glasses
methods allowed us to obta
all dimensions $d=3$ to 7 fo

Our approach can be applie
have tested the algorithm b
ground state overlap, entro
and $d=4$ Migdal-Kadanoff
graphs have provided high
and a number of new predi

Even for the fully connecte
provides some of the most

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