

## **Beyond Moore's Law? Seeking Quantum Speedup Through Spin Glasses**

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There has been considerable progress in the design and construction of quantum annealing devices. However, a conclusive detection of quantum speedup remains elusive. Based on insights from the study of spin glasses combined with large-scale Monte Carlo simulations and data mining techniques, in this talk I present ideas on how to construct tunable hard benchmark problems that work around the intrinsic noise and technical constraints of current quantum optimization machines. Our results show that a careful design of the hardware architecture and benchmark problems is key when building quantum annealers.

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