

Abstract Submitted
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Role of Classical Hardness for Quantum Annealers¹ ITAY HEN,
Univ of Southern California, VICTOR MARTIN-MAYOR, Universidad Com-
plutense de Madrid — The D-Wave Two chip presumably exploits quantum an-
nealing effects to solve optimization problems. Whether D-wave’s quantum an-
nealer is capable of achieving real speedup over classical thermal annealers is a
matter of investigation. In this context, specifically of importance is the question
of how well quantum annealers perform on instances with rugged free-energy land-
scapes for which simulated annealing methods are expected to fail. I will describe
attempts to identify very hard D-Wave-specific instances exhibiting “temperature
chaos” by means of state-of-the-art methods (multi spin coding, parallel tempering
simulations and stochastic time-series analysis), and present results pertaining to
the performance of classical algorithms and the D-wave Two chip on these.

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Itay Hen
Univ of Southern California

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