Benchmarking the D-Wave Two JOSHUA JOB, ZHIHUI WANG, USC, TROELS RØNNOW, MATTHIAS TROYER, ETH, DANIEL LIDAR, USC — We report on experimental work benchmarking the performance of the D-Wave Two programmable annealer on its native Ising problem, and a comparison to available classical algorithms. In this talk we will focus on the comparison with an algorithm originally proposed and implemented by Alex Selby. This algorithm uses dynamic programming to repeatedly optimize over randomly selected maximal induced trees of the problem graph starting from a random initial state. If one is looking for a quantum advantage over classical algorithms, one should compare to classical algorithms which are designed and optimized to maximally take advantage of the structure of the type of problem one is using for the comparison. In that light, this classical algorithm should serve as a good gauge for any potential quantum speedup for the D-Wave Two.

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