Recursive Quantum Bisection

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The quality of a nested dissection ordering is largely determined by the initial separators used to partition the graph. Finding optimal separators is an NP-hard problem, and many heuristics have been developed over the last four decades to find such separators. Quantum annealing is another such heuristic, recently made attractive by the availability of D-Wave's open system, adiabatic quantum annealer. This paper presents a nested dissection algorithm using quantum annealing to find the separators. It contrasts the resulting orderings with those produced by more familiar heuristics on classical computing systems.