Day 2

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Title: Demonstration of a Highly Controllable Quantum Processor for Advanced Annealing Algorithms

Abstract:
We have designed and characterized an advanced quantum annealing processor comprised of twenty five capacitively-shunted flux qubits connected by rf-SQUID tunable couplers in a square grid. The processor architecture maintains independent dynamic biasing over every element, enabling unprecedented control over annealing schedules. We briefly introduce the novel design approach that utilizes the modularity of 3D integration for rapid prototyping and development of future QA processors, as well as the control and infrastructure needed to execute successful annealing algorithms. We then discuss initial characterization of the processor components, and demonstrate examples of the advanced annealing schedules not currently implementable on existing quantum hardware.