Quantum Computation in a Quantum Network

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Arrays of weakly coupled quantum systems of nuclear spins might compute if subjected to a sequence of magnetic pulses of well-defined frequency and length. Such pulsed arrays are quantum computers: bits can be placed in superpositions of 0 and 1, logical operations take place coherently, and dissipation is required only for error correction. Operated with frequent error correction, such a system functions as a parallel digital computer. Operated in a coherent manner, such a device is capable of both creating any desired quantum state of the array and transforming that state in any desired way.