A fully connected qubit network model for quantum information processing applications[1] MARK COFFEY, Colorado School of Mines — We describe a fully connected qubit (spin-1/2) network model for quantum information processing applications. This scalable network in the case of spin 1/2 has recently been realized in the laboratory, using Josephson phase qubits, and other solid- state implementations are likely. We have very recently collaborated in the development of a rigorous protocol for producing the important maximally entangled generalized GHZ states for this implementation [1]. (GHZ states generalize the well known Bell states for two qubits.) As an additional application of the spin network model, we mention how it could be used to perform factoring or other tasks of interest to computational number theory. Joint work with Andrei Galiautdinov and Ron Deiotte.

[1] A. Galiautdinov, M. W. Coffey, and R. Deiotte, arXiv:0907.2225v1 (2009).

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