1117-82-173 **Shannon L Starr*** (slstarr@uab.edu), UAB Department of Mathematics, 1300 University Boulevard, Birmingham, AL 35294-1170. *Comparing Graphs.* Preliminary report.

A graph is a pair G=(V,E). One may define a discrete Laplacian on a graph. Then there are natural elementary inequalities to compare the eigenvalues of the discrete Laplacians on pairs of such graphs. For us a key example is the graph associated to the quantum Heisenberg ferromagnetic spin system, with n spins down and the rest of the spins up. This is close to a product graph but with some vertices removed. Obtaining upper and lower bounds in terms of the product graph gives a partial verification of the physicists' linear spin wave approximation. This type of analysis has been done before by Correggi, Giuliani and Seiringer, as part of more general results they obtained. But we also have some new results not previously obtained by them, in dimensions d=1 and d=2. (Received January 12, 2016)