1120-05-96 **John Engbers*** (john.engbers@marquette.edu), Milwaukee, WI 53201. *Extremal H-colorings of graphs with fixed minimum degree.*

Given a family of graphs, which graph in the family has the most number of H-colorings (homomorphisms to H, or adjacency-preserving maps to H)? We will focus on the family of n-vertex graphs with fixed minimum degree δ. Galvin, and then Cutler and Radcliffe, fully answered this question when H is chosen so that H-colorings correspond to independent sets. For all other choices of H, answers are known for $\delta = 1$ and (when n is large) for $\delta = 2$. For $\delta > 2$, much less is known.

Here we investigate what happens when we impose various connectedness requirements within the family. This naturally leads to considering the family of trees (where Sidorenko provided a complete answer), 2-connected graphs (which is joint work with Galvin), and connected graphs with minimum degree δ; in these families, for all non-regular H and n sufficiently large the unique maximizing graph is $K_{\delta,n-\delta}$. Numerous open questions remain. (Received February 15, 2016)