1143-05-469 **Eric Ramos**, **David Speyer** and **Graham White*** (grrwhite@iu.edu). *Families of nested graphs with compatible symmetric-group actions: classification and properties.*

Kneser graphs are a well-studied family. For any fixed k, the graph G_n has vertices indexed by k–tuples of elements of $[n]$, and edges between disjoint tuples. As n increases, each of these graphs is included in the next. There is an action of the symmetric group S_n on G_n, acting directly on the labels, and these actions are compatible with the graph inclusions via the natural inclusions of each symmetric group into the next.

We study FI–graphs, which are families of nested graphs with such compatible symmetric group actions. It turns out that any FI–graph eventually is of a fairly simple form, which could be considered as a kind of generalised Kneser graph.

Using techniques from the theory of FI–modules, we extend known results about Kneser graphs to these more general objects — for example, that they eventually have a fixed number of distinct eigenvalues, independent of n, and that the multiplicities of these eigenvalues are eventually equal to polynomials in n. (Received August 20, 2018)