Cores of symmetric graphs

Peter Cameron

The talk will be about graphs (finite, undirected, no loops or multiple edges). A homomorphism of graphs is a map from the vertex set of the first graph to that of the second which carries edges to edges; we don't care what it does to non-edges. Two graphs are homomomorphism-equivalent if there are homomorphisms in both directions. This is an equivalence relation, and each equivalence class contains a unique smallest member called a core.

It is known that the core of a vertex-transitive graph is vertex-transitive. The same statement holds for many other symmetry conditions such as edge-transitivity, non-edge transitivity, etc. Cristy Kazanidis and I have been looking at cores of "rank 3 graphs" (those whose automorphism groups are transitive on vertices, ordered edges, and ordered non-edges). We conjecture that for any such graph, either its core is a complete graph, or it is itself a core. Some progress on this conjecture will be reported.

The talk will be self-contained; no knowledge of graphs or groups will be assumed.