Martino Garonzi (UnB): "Factorizing finite primitive groups with point stabilizers"

ABSTRACT: A permutation group G acting faithfully on a set Ω with n points ($|\Omega| = n$ is called the "degree" of G) is said to be "primitive" if there is no non-trivial partition of Ω stabilized by G, in other words if B is a subset of Ω with the property that $B^g = B$ or $B^g \cap B = \emptyset$ for all $g \in G$ (making the union $\bigcup_{g \in G} B^g$ a partition of Ω stabilized by G) then either $|B| = 1$ or $B = \Omega$ (B stands for "block"). A "point stabilizer" of this action is $M = \{g \in G \ : \ \alpha^g = \alpha\}$ where $\alpha \in \Omega$ is a fixed element. Such M is a maximal subgroup of G with trivial core (the intersection of the conjugates of M is trivial).

In a joint work with D. Levy, A. Maróti and I. Simion we proved that there exists a universal constant c such that any finite primitive permutation group of degree n with a non-trivial point stabilizer is a product of no more than $c \log n$ point stabilizers.

An equivalent (and more "abstract") formulation of this result is the following: for every finite group G and every maximal subgroup M of G, G is a product of at most $c \log |G : M|$ conjugates of M.

In this talk I will explain the main ideas of the proof of this result.