Seminário de Álgebra

Integers that are covering numbers of groups.

Martino Garonzi
UnB

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Abstract. For G a finite group let $s(G)$ be the minimal number of proper subgroups of G whose union is G. One of the main open conjectures about $s(G)$ is whether there are infinitely many positive integers that are NOT of the form $s(G)$ where G is a finite group (I will refer to it as "main conjecture"). To attack this problem it makes sense to try to obtain partial results by letting G vary in a given family F of finite groups, in other words given such a family F we may consider the conjecture "there are infinitely many positive integers that are not of the form $s(G)$ where G belongs to F". By a result of Tomkinson this conjecture holds for the family of solvable groups. In a recent work joint with E. Swartz and L. Kappe, in which we obtained several results related to the main conjecture, we worked out the case in which F is the family of groups all of whose proper quotients are solvable. In this talk I will present the main ideas that allowed us to prove this, and the general techniques we like to use to attack the main conjecture.