

From nearly nilpotent groups to Langlands reciprocity for certain solvable Galois extensions

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Abstract

A finite group G is called nearly nilpotent if it admits a normal subgroup N , ALL of whose irreducible representations are of degree at most 2, such that G/N is nilpotent. In this talk, we will discuss some properties of nearly nilpotent groups; and we shall tell the story how the group-theoretic method leads to Langlands reciprocity for any Galois extension of number fields whose Galois group is isomorphic to a direct product of two nearly nilpotent groups. In particular, we will show that Langlands reciprocity holds for every Galois extension of degree less than 60. This extends the previous work of Arthur and Clozel that asserts all Galois representations with finite nilpotent image are automorphic.