Homology and cohomology of solvable groups of finite rank

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Solvable groups have always been a great testing ground for many aspects of group theory and its interactions with topology, geometry and ring theory. In this talk, I will look at homological dimension. There is a simple characterization of the solvable groups of finite vcd (= virtual cohomological dimension) — they are precisely the solvalbe groups of finite rank that are virtually torsion-free. But what is the precise value of the homological or cohomological dimension and how does one attempt to work this out: it is a harder question that you might imagine. In this talk I will describe some new progress involving joint works with Martin Bridson and Karl Lorensen oh homological dimension and near splittings. The principal new discovery, strongly influenced by a clever insight of Derek Robinson, is a result showing that many cohomology and homology groups of soluble groups of finite rank have finite exponent.