

WHITEHEAD PRIZE: citation for Henry Wilton

Short citation:

Dr Henry Wilton, of the University of Cambridge, is awarded a Whitehead Prize for his remarkable contributions to geometric and combinatorial group theory.

Long citation:

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Henry Wilton's multifaceted work touches upon a number of important questions in geometric group theory and low-dimensional topology, in particular with regard to the theory of Gromov hyperbolic groups, to the study of fundamental groups of 3-manifolds, to algorithmic and decision problems in infinite group theory, or to random groups and one-relator groups.

Wilton's work combines high technical power with sophisticated modern geometric methods to tackle both age-old problems and pressing questions of contemporary research. Early on he has made important contributions to the study of limit groups and residually free groups, and to subgroup separability. Later he contributed to perfect our understanding of 3-manifolds groups through a series of deep papers and a book written with Aschenbrenner and Friedl summarizing the state of the art following the breakthroughs of the last twenty years on the Poincaré and Thurston conjectures. Central to these developments is a question of Gromov asking to find surface subgroups in hyperbolic groups. In a recent tour-de-force paper he has settled Gromov's question in the positive for a wide class of hyperbolic groups.

Some of Wilton's other key contributions are connected to fundamental questions in logic, and in particular to the classical decision problems for infinite groups put forward by Max Dehn a century ago. The class of fundamental groups of 3-manifolds provides a vast and rich family of infinite groups that, as Wilton has contributed to demonstrate, can serve as a test ground for these problems. In a breakthrough work (jointly with Martin Bridson), Wilton has solved the long-standing problem of deciding whether or not a finitely presented group has a non-trivial finite quotient. The answer is that this problem is undecidable.

Wilton is a highly creative mathematician as well as a knowledgeable expert in a very active and competitive field of contemporary research to which he has already brought long-lasting contributions.