Citation for James Newton (Whitehead Prize)

Short citation

Professor James Newton of the University of Oxford is awarded a Whitehead Prize for his groundbreaking contributions to the Langlands programme, and in particular for his spectacular joint proof with Jack Thorne of symmetric power functoriality for holomorphic modular forms.

Long citation

Professor James Newton of the University of Oxford is awarded a Whitehead Prize for his groundbreaking contributions to the Langlands programme, and in particular for his spectacular joint proof with Jack Thorne of symmetric power functoriality for holomorphic modular forms.

Newton works on the Langlands programme, an intricate network of conjectures that were formulated more than 50 years ago and that are meant to provide a 'grand unified theory' of mathematics, connecting number theory with other areas, such as representation theory and harmonic analysis. Within this field, Newton established himself as a leader in several areas, from modularity results to the theory of eigenvarieties. He introduced novel ideas and used them to solve a number of long-standing open problems.

In 2019–2020, in joint work with Jack Thorne, he proved symmetric power functoriality for holomorphic modular forms, one of the key and most sought-after test cases for Langlands's conjectures, which had been open for 50 years. This is one of the most important results in algebraic number theory from the past decades and it was deservedly rewarded with the 2023 AMS Cole Prize in Number Theory. The proof of Newton-Thorne, carried out in two papers published in *Publications mathématiques de l'IHÉS*, is a completely unexpected tour de force; it is both ingenious and intricate, and it relies in a crucial way on the beautiful geometry of eigenvarieties.

Professor Newton has made several other major contributions. He was part of the team that proved the Sato–Tate conjecture for elliptic curves over CM fields, in a paper published in the *Annals of Mathematics* in 2023. This is another landmark result that was considered out of reach a decade ago and that required significant new ideas to establish. He also has a number of exciting preprints: with Thorne, extending their work on symmetric power functoriality to the setting of Hilbert modular forms; with Caraiani on the modularity of elliptic curves over imaginary quadratic fields; with Boxer, Calegari, Gee and Thorne on the Ramanujan conjecture for Bianchi modular forms.

Overall, the prize committee was extremely impressed with his body of work. His contributions from the past five years, to both functoriality and reciprocity in the Langlands programme, are truly astonishing.