LONDON MATHEMATICAL SOCIETY
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Whitehead Prize: citation for Vidit Nanda

Short citation:

Professor Vidit Nanda of the University of Oxford is awarded a Whitehead Prize for his outstanding contributions at the intersection of geometry, topology, and data science. Recognised as a leader in computational and applied topology, Nanda has significantly advanced the field through pioneering theoretical developments, including foundational work on discrete Morse theory and innovative applications of sheaf theory to stratified spaces.

Long citation:

Professor Vidit Nanda of the University of Oxford is awarded a Whitehead Prize for his groundbreaking contributions at the intersection of geometry, topology, and data science. Nanda has established himself as a leading mathematician of his generation working in computational and applied topology, significantly advancing the field through innovative theory and broad applications.

Among his profound theoretical achievements is the categorical foundation he established for discrete Morse theory, extending the Cohen-Jones-Segal framework on flow categories into a discrete computational setting. His elegant approach using 2-categories, notably leveraging MacPherson's entrance-path category, provides profound categorical foundations for modern topological data analysis, positioning Nanda at the forefront of applied and computational topology.

Nanda's pioneering work applying local cohomology to computationally characterize stratified spaces represents a major advancement. This influential research successfully tackled the complex challenge of stratification learning, where earlier simpler methods had proven inadequate. His sophisticated integration of sheaf cohomology and Morse theory exemplifies his extraordinary capability to bridge theoretical mathematics with computational applications.

His recent work on quiver Laplacians, developed collaboratively with Sumray and Harrington, further underscores his distinctive approach – transforming elegant mathematical theory into powerful computational frameworks. By employing quiver theory in practical settings, such as image processing and broader data science challenges, Nanda has vividly demonstrated his ability to render sophisticated mathematical constructs both accessible and impactful.

Professor Vidit Nanda's work embodies a rare combination of theoretical sophistication, computational ingenuity, and practical influence, reshaping applied topology and impacting a diverse array of scientific disciplines. This is paired with a dedicated mentorship of students and the elegance with which he presents his groundbreaking research.