INTERNATIONAL MATHEMATICAL UNION

FIELDS MEDAL 2026

JOHN PARDON

SHORT CITATION

For his achievements in symplectic geometry including new approaches to virtual fundamental cycles, Fukaya categories of certain manifolds and counting holomorphic curves, and for his contributions to other areas of geometry and topology, including group actions on 3-manifolds and knot theory.

LONG CITATION

John Pardon is a mathematician of extraordinary depth and originality, who has repeatedly had a significant impact on the fields of topology and symplectic geometry. He has both contributed to fundamental structure and solved problems that had stymied the community for decades.

In topology Pardon answered an old question of Gromov about the distortion of torus knots. He went on to give a big progress on the 70 years old Hilbert-Smith conjecture, which states that a locally compact topological group that acts faithfully on a connected n -manifold must be a Lie group, by proving the conjecture for $n = 3$.

In symplectic geometry Pardon's first important paper transported techniques from algebraic topology to give an alternate construction of virtual fundamental cycles for moduli spaces of pseudo-holomorphic curves. He applied his machinery to several problems in symplectic geometry, for example, a proof of Arnold conjecture, originally due to Fukaya-Ono, Liu-Tian and Ruan, a definition of contact homology proposed by Eliashberg-Givental-Hofer, and so on.

Another of Pardon's striking achievements is contained in a series of papers with Ganatra and Shende on computations and structural results concerning wrapped Fukaya categories of certain non-compact symplectic manifolds, conjectured by Kontsevich and Nadler.

Most recently, Pardon made a major breakthrough in enumerative geometry, namely in the problem of comparing different methods that have been proposed to count curves in certain complex 3-folds. Maulik, Nekrasov, Okounkov and Pandharipande had conjectured a deep and surprising connection between the generating functions for Gromov-Witten invariants and Donaldson-Thomas invariants. Pardon proposed a highly innovative approach to this problem when the anti-canonical bundle is nef.