

SHORT CITATION

Graeme Segal is awarded the Chern Medal 2026 for his visionary mathematical insights, that have had an enduring influence in a wide range of fields, including topology, mathematical physics, representation theory and category theory.

LONG CITATION

Graeme Segal is a mathematician of extraordinary depth and vision, whose work has profoundly influenced multiple areas of mathematics and mathematical physics. His ideas have left a transformative and lasting influence on a range of fields, including stable and equivariant homotopy theory, conformal field theory, integrable systems, loop group representations, and moduli spaces, and have shaped the development of higher category theory.

Segal's contributions are characterized by originality, clarity, and a unique ability to simplify complex ideas.

He introduced categorical methods into mainstream topology, starting from the classifying space of a category, a now indispensable tool of modern homotopy theory. His pioneering work on configuration spaces with the “scanning” method and group completion theorem, with McDuff, provided the conceptual Framework that allowed for breakthroughs, also in recent years, in the study of topological moduli spaces and beyond. Another early landmark result is the Atiyah-Segal completion theorem in equivariant K-theory which shapes our understanding of the relationship between equivariant and non-equivariant theories. It led Segal to propose a similar completion theorem in equivariant stable homotopy theory, whose eventual resolutions has become a cornerstone of the subject, still referred to as the Segal Conjecture.

Segal's early work on delooping machines provided a novel conceptualization of stable homotopy theory that remains today a main tool for carrying out constructions and calculations. Going beyond its original intent, his definition of homotopy-coherent multiplication via simplicial objects gave a powerful formalism for the modern development of higher category theory, and terms like “Segal space” and “Segal category” are now ubiquitous in the subject.

His influence extends deeply into mathematical physics. A key contribution was Segal's axiomatic formulation of two-dimensional conformal field theory in the late 1980s, that provided a rigorous mathematical foundation for a central concept in physics. His functorial approach, viewing field theories as functors from cobordism categories, has become a guiding principle for decades of research. This work inspired Atiyah's axiomatization of topological quantum field theory and laid the groundwork for the development of the field.

Segal also made foundational contributions to the representation theory of loop groups and their applications to mathematical physics. In an influential paper with Wilson, Segal provided a deep link between loop groups and integrable systems, relating the geometry of infinite grassmanians to solutions of the KdV equation. His book *Loop Groups* with Pressley, remains the definitive account of the subject, transferring powerful methods from finite-dimensional Lie theory to the infinite-dimensional setting.

Beyond technical achievements, Segal's impact lies in his compelling vision and clarifying ideas. Many of his ideas have become so embedded into the subject that their origins are often forgotten, yet several areas of mathematics and mathematical physics are now unthinkable without them. His work has integrated topology, geometry, representation theory, and physics into a unified geometric perspective. He has illuminated difficult concepts with remarkable simplicity, making them accessible to mathematicians and physicists alike, and his generosity in sharing ideas has amplified his influence far beyond his published papers. His work has not only solved deep problems but has changed the way entire fields are conceptualized.