1. Record Nr. UNINA9910300137003321

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Titolo	Motivic Integration / / by Antoine Chambert-Loir, Johannes Nicaise, Julien Sebag
Pubbl/distr/stampa	New York, NY : , : Springer New York : , : Imprint : Birkhäuser, , 2018
ISBN	1-4939-7887-X
Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (540 pages)
Collana	Progress in Mathematics, , 0743-1643 ; ; 325
Disciplina	516.35
Soggetti	Geometry, Algebraic K-theory Algebraic Geometry K-Theory
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Prologue: p-adic Integration -- Analytic Manifolds -- The Theorem of Batyrev-Kontsevich -- Igusa's Local Zeta Function -- The Grothendieck Ring of Varieties -- Additive Invariants on Algebraic Varieties -- Motivic Measures -- Cohomolical Realizations -- Localization, Completion, and Modification -- The Theorem of Bittner -- The Theorem of Larsen–Lunts and Its Applications -- Arc Schemes -- Weil Restriction -- Jet Schemes -- The Arc Scheme of a Variety -- Topological Properties of Arc Schemes -- The Theorem of Grinberg–Kazhdan–Drinfeld -- Greenberg Schemes -- Complete Discrete Valuation Rings -- The Ring Schemes Rn -- Greenberg Schemes -- Topological Properties of Greenberg Schemes -- Structure Theoremes for Greenberg Schemes -- Greenberg Approximation on Formal Schemes -- The Structure of the Truncation Morphisms -- Greenberg Schemes and Morphisms of Formal Schemes -- Motivic Integration -- Motivic Integration in the Smooth Case -- The Volume of a Constructibel Subset -- Measurable Subsets of Greenberg Schemes -- Motivic Integrals -- Semi-algebraic Subsets of Greenberg Schemes -- Applications -- Kapranov's Motivic Zeta Function -- Valuations and the Space of Arcs -- Motivic Volume and Birational Invariants -- Denef-Loeser's Zeta Function and the Monodromy Conjecture -- Motivic Invariants of Non-Archimedean Analytic Spaces -- Motivic Zeta

Functions of Formal Shemes and Analytic Spaces -- Motivic Serre Invariants of Algebraic Varieties -- Appendix -- Constructibility in Algebraic Geometry -- Birational Geometry -- Formal and Non-Archimedean Geometry -- Index -- Bibliography.

Sommario/riassunto

This monograph focuses on the geometric theory of motivic integration, which takes its values in the Grothendieck ring of varieties. This theory is rooted in a groundbreaking idea of Kontsevich and was further developed by Denef & Loeser and Sebag. It is presented in the context of formal schemes over a discrete valuation ring, without any restriction on the residue characteristic. The text first discusses the main features of the Grothendieck ring of varieties, arc schemes, and Greenberg schemes. It then moves on to motivic integration and its applications to birational geometry and non-Archimedean geometry. Also included in the work is a prologue on p-adic analytic manifolds, which served as a model for motivic integration. With its extensive discussion of preliminaries and applications, this book is an ideal resource for graduate students of algebraic geometry and researchers of motivic integration. It will also serve as a motivation for more recent and sophisticated theories that have been developed since. .