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IT Architect: Foundation in the Art of Infrastructure Design: A Practical Guide for IT Architects Direct Support and General Support Maintenance Manual *Deformation Quantization for Actions of R^d* *Generalized Tate Cohomology* **Coherence for Tricategories** On the Coefficients of Cyclotomic Polynomials Deformation Theory of Pseudogroup Structures **Pseudofunctors on Modules with Zero Dimensional Support Manifolds with Group Actions and Elliptic Operators Principal Currents for a Pair of Unitary Operators Molecular Propagation through Electron Energy Level Crossings Finite Rational Matrix Groups Some Special Properties of the Adjunction Theory for 3-Folds in $\mathbb P^5$** *Second-Order Sturm-Liouville Difference Equations and Orthogonal Polynomials* **Extensions of the Jacobi Identity for Vertex Operators, and Standard $A^{(1)}_1$-Modules** *Harmonic Analysis for Anisotropic Random Walks on Homogeneous Trees* **Littlewood-Paley Theory on Spaces of Homogeneous Type and the Classical Function Spaces A Proof of the q-Macdonald-Morris Conjecture for BC_n** *The Kinematic Formula in Riemannian Homogeneous Spaces* **Anticipative Girsanov Transformations and Skorohod Stochastic Differential Equations** *The 2-Dimensional Attractor of x'(t)=-mu x(t) + f(x(t-1))* **Automorphisms of the Lattice of Recursively Enumerable Sets Stable Networks and Product Graphs Parabolic Anderson Problem and Intermittency** On the Classification of C^*-algebras of Real Rank Zero: Inductive Limits of Matrix Algebras over Non-Hausdorff Graphs *The Full Set of Unitarizable Highest Weight Modules of Basic Classical Lie Superalgebras* **Density of Prime Divisors of Linear Recurrences Iterating the Cobar Construction The Index Theorem for Minimal Surfaces of Higher Genus** *Orthogonal Decompositions and Functional Limit Theorems for Random Graph Statistics Markov Fields over Countable Partially Ordered Sets: Extrema and Splitting* **Textile Systems for Endomorphisms and Automorphisms of the Shift** *Chapter 16 of Ramanujan's Second Notebook: Theta-Functions and q-Series* **Prime Ideals in Skew and q-Skew Polynomial Rings** *I-Density Continuous Functions The Method of Layer Potentials for the Heat Equation in Time-Varying Domains Separatrix Surfaces and Invariant Manifolds of a Class of Integrable Hamiltonian Systems and Their Perturbations* **Higher Spinor Classes An Index of a Graph with Applications to Knot Theory An Extension of the Galois Theory of Grothendieck**

Density of Prime Divisors of Linear Recurrences Aug 06 2020 A result due to Hasse says that, on average, 17 out of 24 consecutive primes will divide a number in the sequence $U_n = 2^n+1$. There are few sequences of integers for which this relative density can be computed exactly. In this work, Ballot links Hasse's method to the concept of the group associated with the set of second-order recurring sequences having the same characteristic polynomial and to the concept of the rank of prime division in a Lucas sequence. This combination of methods and ideas allows the establishment of new density results. Ballot also shows that this synthesis can be generalized to recurring sequences of any order, for which he also obtains new density results. All the results can be shown to be in close agreement with the densities computed using only a small set of primes. This well-written book is fairly elementary in nature and requires only some background in Galois theory and algebraic number theory.

The Index Theorem for Minimal Surfaces of Higher Genus Jun 03 2020 The question of estimating the number of minimal surfaces that bound a prescribed contour has been open since Douglas's solution of the Plateau problem in 1931. In this book, the authors formulate and prove an index theorem for minimal surfaces of higher topological type spanning one boundary contour. The Index Theorem for Minimal Surfaces of Higher Genus describes, in terms of Fredholm Index, a rough measure on the set of curves bounding minimal surfaces of prescribed branching type and genus.

Direct Support and General Support Maintenance Manual Sep 30 2022
An Index of a Graph with Applications to Knot Theory Jul 25 2019 This book presents a remarkable application of graph theory to knot theory. In knot theory, there are a number of easily defined geometric invariants that are extremely difficult to compute; the braid index of a knot or link is one example. The authors evaluate the braid index for many knots and links using the generalized Jones polynomial and the index of a graph, a new invariant introduced here. This invariant, which is determined algorithmically, is likely to be of particular interest to computer scientists.
Coherence for Tricategories Jun 27 2022 The need to address the appropriate three-dimensional generalization of category (tricategory) has been felt in homotopy theory, low-dimensional topology, cohomology theory, category theory, and quantum field theory. Benabou's bicategories provide the two-dimensional notion into which examples naturally fit. In developing the theory of bicategories it is very reassuring to know the coherence theorem: They can be replaced by the stricter 2-categories which are merely categories enriched in the category of categories. In this book, the authors provide ... the unique source of the full definition of tricategory a thorough and complete proof of the coherence theorem for tricategories a wholly modern source of material on Gray's tensor product of 2-categories
On the Coefficients of Cyclotomic Polynomials May 27 2022 This book studies the coefficients of cyclotomic polynomials. Let $a(m,n)$ be the m th coefficient of the n th cyclotomic polynomial $\Phi_n(z)$, and let $a(m)=\textnormal{max}_n \vert a(m,n)\vert$. The principal result is an asymptotic formula for $\textnormal{log}a(m)$ that improves a recent estimate of Montgomery and Vaughan. Bachman also gives similar formulae for the logarithms of the one-sided extrema $a^*(m)=\textnormal{max}_na(m,n)$ and $a_*(m)=\textnormal{min}_na(m,n)$. In the course of the proof, estimates are obtained for certain exponential sums which are of independent interest.
Harmonic Analysis for Anisotropic Random Walks on Homogeneous Trees Jul 17 2021 This work presents a detailed study of the anisotropic series representations of the free product group $\mathbf Z/2\mathbf Z\star \cdots \star \mathbf Z/2\mathbf Z$. These representations are infinite dimensional, irreducible, and unitary and can be divided into principal and complementary series. Anisotropic series representations are interesting because, while they are not restricted from any larger continuous group in which the discrete group is a lattice, they nonetheless share many properties of such restrictions. The results of this work are also valid for nonabelian free groups on finitely many generators.
Finite Rational Matrix Groups Nov 20 2021 The study of finite rational matrix groups reduces to the investigation of the maximal finite irreducible matrix groups and their natural lattices, which often turn out to have rather beautiful geometric and arithmetic properties. This book presents a full classification in dimensions up to 23 and with restrictions in dimensions and $p+1$ and $p-1$ for all prime numbers p. Nonmaximal finite groups might act on several types of lattices and therefore embed into more than one maximal finite group. This gives rise to a simplicial complex interrelating the maximal finite groups and measuring the complexity of the dimension. Group theory, integral representation theory, arithmetic theory of quadratic forms and algorithmic methods are used.
Parabolic Anderson Problem and Intermittency Nov 08 2020 This book is devoted to the analysis of the large time asymptotics of the solutions of the heat equation in a random time-dependent potential. The authors give complete results in the discrete case of the d-dimensional lattice when the potential is, at each site, a Brownian motion in time. The phenomenon of intermittency of the solutions is discussed.
I-Density Continuous Functions Nov 28 2019 The classical approach to showing the parallel between theorems concerning Lebesgue measure and theorems concerning Baire category on the real line is restricted to sets of measure zero and sets of first category. This is because classical Baire category theory does not have an analogue for the Lebesgue density theorem. By using {mathcal I}-density, this deficiency is removed, and much of the structure of measurable sets and functions can be shown to exist in the sense of category as well. This monograph explores category analogues to such things as the density topology, approximate continuity, and density continuity. In addition, some questions about topological semigroups of real functions are answered.
Separatrix Surfaces and Invariant Manifolds of a Class of Integrable Hamiltonian Systems and Their Perturbations Sep 26 2019 This work presents a study of the foliations of the energy levels of a class of integrable Hamiltonian systems by the sets of constant energy and angular momentum. This includes a

classification of the topological bifurcations and a dynamical characterization of the critical leaves (separatrix surfaces) of the foliation. Llibre and Nunes then consider Hamiltonian perturbations of this class of integrable Hamiltonians and give conditions for the persistence of the separatrix structure of the foliations and for the existence of transversal ejection-collision orbits of the perturbed system. Finally, they consider a class of non-Hamiltonian perturbations of a family of integrable systems of the type studied earlier and prove the persistence of 'almost all' the tori and cylinders that foliate the energy levels of the unperturbed system as a consequence of KAM theory.

A Proof of the q-Macdonald-Morris Conjecture for BC_n May 15 2021 Macdonald and Morris gave a series of constant term q-conjectures associated with root systems. Selberg evaluated a multivariable beta type integral which plays an important role in the theory of constant term identities associated with root systems. Aomoto recently gave a simple and elegant proof of a generalization of Selberg's integral. Kadell extended this proof to treat Askey's conjectured q-Selberg integral, which was proved independently by Habsieger. This monograph uses a constant term formulation of Aomoto's argument to treat the q-Macdonald-Morris conjecture for the root system BC_n. The B_n, $B_n^{\lor }$, and D_n cases of the conjecture follow from the theorem for BC_n. Some of the details for C_n and $C_n^{\lor }$ are given. This illustrates the basic steps required to apply methods given here to the conjecture when the reduced irreducible root system R does not have miniscule weight.

Some Special Properties of the Adjunction Theory for 3-Folds in $\mathbb P^5$ Oct 20 2021 This work studies the adjunction theory of smooth 3-folds in $\mathbb P^5$. Because of the many special restrictions on such 3-folds, the structure of the adjunction theoretic reductions are especially simple, e.g. the 3-fold equals its first reduction, the second reduction is smooth except possibly for a few explicit low degrees, and the formulae relating the projective invariants of the given 3-fold with the invariants of its second reduction are very explicit. Tables summarizing the classification of such 3-folds up to degree 12 are included. Many of the general results are shown to hold for smooth projective n-folds embedded in $\mathbb P^N$ with $N \leq 2n-1$.

Generalized Tate Cohomology Jul 29 2022 This book presents a systematic study of a new equivariant cohomology theory $t(k_G)^*$ constructed from any given equivariant cohomology theory k^*_G, where G is a compact Lie group. Special cases include Tate-Swan cohomology when G is finite and a version of cyclic cohomology when $G = S^1$. The groups $t(k_G)^*(X)$ are obtained by suitably splicing the k-homology with the k-cohomology of the Borel construction $EG\times _G X$, where k^* is the nonequivariant cohomology theory that underlies k^*_G. The new theories play a central role in relating equivariant algebraic topology with current areas of interest in nonequivariant algebraic topology. Their study is essential to a full understanding of such ``completion theorems'' as the Atiyah-Segal completion theorem in K-theory and the Segal conjecture in cohomotopy. When G is finite, the Tate theory associated to equivariant K-theory is calculated completely, and the Tate theory associated to equivariant cohomotopy is shown to encode a mysterious web of connections between the Tate cohomology of finite groups and the stable homotopy groups of spheres.

Higher Spinor Classes Aug 25 2019 This work defines the higher spinor classes of an orthogonal representation of a Galois group. These classes are higher-degree analogues of the Frohlich spinor class, which quantify the difference between the Stiefel-Whitney classes of an orthogonal representation and the Hasse-Witt classes of the associated form. Jardine establishes various basic properties, including vanishing in odd degrees and an induction formula for quadratic field extensions. The methods used include the homotopy theory of simplicial presheaves and the action of the Steenrod algebra on mod 2 etale cohomology.

Second-Order Sturm-Liouville Difference Equations and Orthogonal Polynomials Sep 18 2021 This well-written book is a timely and significant contribution to the understanding of difference equations. Presenting machinery for analyzing many discrete physical situations, the book will be of interest to physicists and engineers as well as mathematicians. The book develops a theory for regular and singular Sturm-Liouville boundary value problems for difference equations, generalizing many of the known results for differential equations. Discussing the self-adjointness of these problems as well as their abstract spectral resolution in the appropriate L^2 setting, the book gives necessary and sufficient

conditions for a second-order difference operator to be self-adjoint and have orthogonal polynomials as eigenfunctions. These polynomials are classified into four categories, each of which is given a properties survey and a representative example. Finally, the book shows that the various difference operators defined for these problems are still self-adjoint when restricted to ``energy norms''. This book is suitable as a text for an advanced graduate course on Sturm-Liouville operators or on applied analysis.

Littlewood-Paley Theory on Spaces of Homogeneous Type and the Classical Function Spaces Jun 15 2021 In this work, Han and Sawyer extend Littlewood-Paley theory, Besov spaces, and Triebel-Lizorkin spaces to the general setting of a space of homogeneous type. For this purpose, they establish a suitable analogue of the Calder 'on reproducing formula and use it to extend classical results on atomic decomposition, interpolation, and T1 and Tb theorems. Some new results in the classical setting are also obtained: atomic decompositions with vanishing b-moment, and Littlewood-Paley characterizations of Besov and Triebel-Lizorkin spaces with only half the usual smoothness and cancellation conditions on the approximate identity.

Molecular Propagation through Electron Energy Level Crossings Dec 22 2021 The principal results of this paper involve the extension of the time-dependent Born-Oppenheimer approximation to accommodate the propagation of nuclei through generic, minimal multiplicity electron energy level crossings. The Born-Oppenheimer approximation breaks down at electron energy level crossings, which are prevalent in molecular systems. We classify generic, minimal multiplicity level crossings and derives a normal form for the electron Hamiltonian near each type of crossing. We then extend the time-dependent Born-Oppenheimer approximation to accommodate the propagation of nuclei through each type of electron energy level crossing.

An Extension of the Galois Theory of Grothendieck Jun 23 2019

Prime Ideals in Skew and q-Skew Polynomial Rings Dec 30 2019 There has been continued interest in skew polynomial rings and related constructions since Ore's initial studies in the 1930s. New examples not covered by previous analyses have arisen in the current study of quantum groups. The aim of this work is to introduce and develop new techniques for understanding the prime ideals in skew polynomial rings $S=R[y;\tau, \delta]$, for automorphisms τ and τ-derivations δ of a noetherian coefficient ring R. Goodearl and Letzter give particular emphasis to the use of recently developed techniques from the theory of noncommutative noetherian rings. When R is an algebra over a field k on which τ and δ act trivially, a complete description of the prime ideals of S is given under the additional assumption that $\tau ^{-1}\delta \tau = q\delta$ for some nonzero $q\in k$. This last hypothesis is an abstraction of behavior found in many quantum algebras, including q-Weyl algebras and coordinate rings of quantum matrices, and specific examples along these lines are considered in detail.

The Method of Layer Potentials for the Heat Equation in Time-Varying Domains Oct 27 2019 Recent years have seen renewed interest in the solution of parabolic boundary value problems by the method of layer potentials, a method that has been extraordinarily useful in the solution of elliptic problems. This book develops this method for the heat equation in time-varying domains. In the first chapter, Lewis and Murray show that certain singular integral operators on L^p are bounded. In the second chapter, they develop a modification of the David buildup scheme, as well as some extension theorems, to obtain L^p boundedness of the double layer heat potential on the boundary of the domains. The third chapter uses the results of the first two, along with a buildup scheme, to show the mutual absolute continuity of parabolic measure and a certain projective Lebesgue measure. Lewis and Murray also obtain A_∞ results and discuss the Dirichlet and Neumann problems for a certain subclass of the domains.

Automorphisms of the Lattice of Recursively Enumerable Sets Jan 11 2021 This work explores the connection between the lattice of recursively enumerable (r.e.) sets and the r.e. Turing degrees. Cholak presents a degree-theoretic technique for constructing both automorphisms of the lattice of r.e. sets and isomorphisms between various substructures of the lattice. In addition to providing another proof of Soare's Extension Theorem, this technique is used to prove a collection of new results, including: every non recursive r.e. set is automorphic to a high r.e. set; and for every non recursive r.e. set A and for every high r.e. degree h there is an r.e. set B in h such that A and B form isomorphic principal filters in the lattice of r.e. sets.

Deformation Quantization for Actions of R^d Aug 30 2022 This work describes a general construction of a deformation quantization for any Poisson bracket on a manifold which comes from an action of R^d on that manifold. These deformation quantizations are strict, in the sense that the deformed product of any two functions is again a function and that there are corresponding involutions and operator norms. Many of the techniques involved are adapted from the theory of pseudo-differential operators. The construction is shown to have many favorable properties. A number of specific examples are described, ranging from basic ones such as quantum disks, quantum tori, and quantum spheres, to aspects of quantum groups.

IT Architect: Foundation in the Art of Infrastructure Design: A Practical Guide for IT Architects Nov 01 2022 The first book in the IT Architect series helps aspiring & experienced IT infrastructure architects/administrators, and those pursuing infrastructure design certifications, establish a solid foundation in the art of infrastructure design. The three autho

Iterating the Cobar Construction Jul 05 2020 This book develops a new topological invariant called the m-structure, which incorporates all information contained in the canonical coproduct and the Steenrod operations. Given a chain complex equipped with an m-structure, Smith shows that its cobar construction also has a natural m-structure. This derived m-structure of the cobar construction corresponds to the m-structure of the loop space of the original space under the map that carries the cobar construction to the loop space. This result allows one to form iterated cobar constructions which Smith shows are homotopy equivalent to iterated loop spaces. These results are applied to the computation of the cohomology algebra structure of total spaces of fibrations.

On the Classification of C^*-algebras of Real Rank Zero: Inductive Limits of Matrix Algebras over Non-Hausdorff Graphs Oct 08 2020 This work shows that K-theoretic data is a complete invariant for certain inductive limit C^*-algebras. C^*-algebras of this kind are useful in studying group actions. Su gives a K-theoretic classification of the real rank zero C^*-algebras that can be expressed as inductive limits of finite direct sums of matrix algebras over finite (possibly non-Hausdorff) graphs or Hausdorff one-dimensional spaces defined as inverse limits of finite graphs. In addition, Su establishes a characterization for an inductive limit of finite direct sums of matrix algebras over finite (possibly non-Hausdorff) graphs to be real rank zero.

Anticipative Girsanov Transformations and Skorohod Stochastic Differential Equations Mar 13 2021 This book presents a survey of some recent developments in an important subfield of the new subject of anticipative stochastic analysis. D. Nualart and E. Pardoux have developed into a practicable calculus the theory of stochastic integration of processes not necessarily adapted to the driving Wiener process. This leads to anticipative stochastic differential equations with Skorohod integral and to anticipative Girsanov transformations, both of which are studied in the present work. The anticipative Girsanov transformations constitute the main tool for tackling stochastic differential equations with Skorohod integral. However, Buckdahn does not restrict attention only to this aspect but also considers different types of anticipative transformations and derives sufficient conditions for their absolute continuity with respect to the Wiener measure. The stochastic differential equations with Skorohod integral are studied under random initial conditions as well as under random boundary conditions.

Chapter 16 of Ramanujan's Second Notebook: Theta-Functions and q-Series Jan 29 2020

Manifolds with Group Actions and Elliptic Operators Feb 21 2022 This work studies equivariant linear second order elliptic operators P on a connected noncompact manifold X with a given action of a group G . The action is assumed to be cocompact, meaning that GV=X for some compact subset V of X . The aim is to study the structure of the convex cone of all positive solutions of Pu= 0. It turns out that the set of all normalized positive solutions which are also eigenfunctions of the given G -action can be realized as a real analytic submanifold *G [0 of an appropriate topological vector space *H . When G is finitely generated, *H has finite dimension, and in nontrivial cases *G [0 is the boundary of a strictly convex body in *H. When G is nilpotent, any positive solution u can be represented as an integral with respect to some uniquely defined positive Borel measure over *G [0 . Lin and Pinchover also discuss related results for parabolic equations on X and for elliptic operators on noncompact manifolds with boundary.

Stable Networks and Product Graphs Dec 10 2020 The structural and algorithmic study of stability in

nonexpansive networks is based on a representation of the possible assignments of Boolean values for a network as vertices in a Boolean hypercube under the associated Hamming metric. This global view takes advantage of the median properties of the hypercube, and extends to metric networks, where individual values are now chosen from the finite metric spaces and combined by means of an additive product operation. The relationship between products of metric spaces and products of graphs then establishes a connection between isometric representation in graphs and nonexpansiveness in metric networks.

Pseudofunctors on Modules with Zero Dimensional Support Mar 25 2022 This book examines a topic from the theory of residues and duality. For broad classes of local algebras $f:R\rightarrow S$ and an R-module M of zero dimensional support, Huang provides various canonical constructions of an S-module of zero dimensional support. Canonical isomorphisms between the various approaches are given using the residue map. The constructions preserve injective hulls of residue fields. This work should be of considerable interest to people working with residual complexes and duality theory, as well as to those interested in injective modules.

Orthogonal Decompositions and Functional Limit Theorems for Random Graph Statistics May 03 2020 This book develops a method to obtain limit theorems for various functionals of random graphs. The method is based on a certain orthogonal decomposition. Janson's results include limit theorems for the two standard random graph models, $G_{n,p}$ and $G_{n,m}$, as well as functional limit theorems for the evolution of a random graph and results on the maximum of a function during the evolution. Janson obtains both normal and nonnormal limits, and the method provides an explanation for the appearance of nonnormal limits. Applications to subgraph counts and to vertex degrees are presented as examples.

The 2-Dimensional Attractor of x'(t)=-mu x(t) + f(x(t-1)) Feb 09 2021 The equation $x'(t) = - \mu x(t) + f(x(t-1))$, with $\mu \geq 0$ and $xf(x) \le 0$ for $0\neq x\in {\mathbb R}$, is a prototype for delayed negative feedback combined with friction. Its semiflow on $C=C([-1,0],{\mathbb R})$ leaves a set S invariant, which also plays a major role for the dynamics on the full space C. The main result determines the attractor of the semiflow restricted to the closure of S for monotone, bounded, smooth f. In the course of the proof, Walther derives Poincare-Bendixson theorems for differential-delay equations. The method used here is unique in its use of winding numbers and homotopies in nonconvex sets.

Deformation Theory of Pseudogroup Structures Apr 25 2022

Principal Currents for a Pair of Unitary Operators Jan 23 2022 Principal currents were invented to provide a noncommutative spectral theory in which there is still significant localization. These currents are often integral and are associated with a vector field and an integer-valued weight which plays the role of a multi-operator index. The study of principal currents involves scattering theory, new geometry associated with operator algebras, defect spaces associated with Wiener-Hopf and other integral operators, and the dilation theory of contraction operators. This monograph explores the metric geometry of such currents for a pair of unitary operators and certain associated contraction operators. Applications to Toeplitz, singular integral, and differential operators are included.

Textile Systems for Endomorphisms and Automorphisms of the Shift Mar 01 2020 One of the major topics in symbolic dynamics is the analysis of the dynamical systems defined by endomorphisms and automorphisms of subshifts. This includes analysis of the dynamical behavior of one-dimensional cellular automata as a special case. In this work, Nasu introduces the notion of a textile system, which is useful in analyzing the dynamical systems defined by endomorphisms and automorphisms of topological Markov shifts, including one-sided ones. The dynamical properties of automorphisms of sofic systems are also studied. Requiring few prerequisites, this work will appeal not only to specialists in symbolic dynamics but also to nonspecialists interested in symbolic dynamics and those interested in analysis of the dynamical behavior of cellular automata.

The Full Set of Unitarizable Highest Weight Modules of Basic Classical Lie Superalgebras Sep 06 2020 This work contains a complete description of the set of all unitarizable highest weight modules of classical Lie superalgebras. Unitarity is defined in the superalgebraic sense, and all the algebras are over the complex numbers. Part of the classification determines which real forms, defined by anti-linear anti-involutions, may occur. Although there have been many investigations for some special superalgebras, this appears to be the first systematic study of the problem.

Extensions of the Jacobi Identity for Vertex Operators, and Standard $A^{(1)}_1$-Modules Aug 18 2021 This book extends the Jacobi identity, the main axiom for a vertex operator algebra, to multi-operator identities. Based on constructions of Dong and Lepowsky, relative ${\mathbf Z}_2$-twisted vertex operators are then introduced, and a Jacobi identity for these operators is established. Husu uses these ideas to interpret and recover the twisted Z -operators and corresponding generating function identities developed by Lepowsky and Wilson for the construction of the standard $A^{(1)}_1$-modules. The point of view of the Jacobi identity also shows the equivalence between these twisted Z-operator algebras and the (twisted) parafermion algebras constructed by Zamolodchikov and Fadeev. The Lepowsky-Wilson generating function identities correspond to the identities involved in the construction of a basis for the space of C-disorder fields of such parafermion algebras.

The Kinematic Formula in Riemannian Homogeneous Spaces Apr 13 2021 This book shows that much of classical integral geometry can be derived from the coarea formula by some elementary techniques. Howard generalizes much of classical integral geometry from spaces of constant sectional curvature to arbitrary Riemannian homogeneous spaces. To do so, he provides a general definition of an ``integral invariant'' of a submanifold of the space that is sufficiently general enough to cover most cases that arise in integral geometry. Working in this generality makes it clear that the type of integral geometric formulas that hold in a space does not depend on the full group of isometries, but only on the isotropy subgroup. As a special case, integral geometric formulas that hold in Euclidean space also hold in all the simply connected spaces of constant curvature. Detailed proofs of the results and many examples are included. Requiring background of a one-term course in Riemannian geometry, this book may be used as a textbook in graduate courses on differential and integral geometry.

Markov Fields over Countable Partially Ordered Sets: Extrema and Splitting Apr 01 2020 Various notions of the Markov property relative to a partial ordering have been proposed by both physicists and mathematicians. For the most part, the analysis has focused on the study of some important, but special, examples. This work develops general techniques for studying Markov fields on partially ordered sets. The authors introduce random transformations of the index set which preserve the Markov property of the field. These transformations yield new classes of Markov fields starting from relatively simple ones. Examples include a model for crack formation and a model for the distribution of fibres in a composite material. Given the burst of popularity of random fields, this self-contained and accessible book will prove useful in the many scientific areas where random field models are appearing.