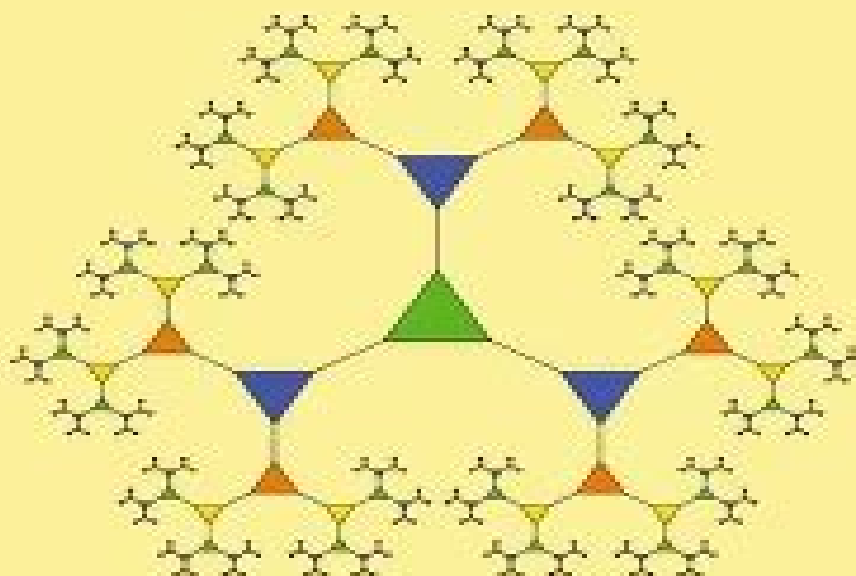


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Sl2 Representations Of Finitely Presented Groups

Volker Diekert, Martin Kreuzer



SL2 Representations Of Finitely Presented Groups:

\$SL(2)\$ Representations of Finitely Presented Groups Gregory W. Brumfiel, H. M. Hilden, 1995 This book is essentially self contained and requires only a basic abstract algebra course as background The book includes and extends much of the classical theory of $SL(2)$ representations of groups Readers will find $SL(2)$ Representations of Finitely Presented Groups relevant to geometric theory of three dimensional manifolds representations of infinite groups and invariant theory Features A new finitely computable invariant H^p associated to groups and used to study the $SL(2)$ representations of p Invariant theory and knot theory related through $SL(2)$ representations of knot groups

Finitely Presented Groups Volker Diekert, Martin Kreuzer, 2024-10-07 This book contains surveys and research articles on the state of the art in finitely presented groups for researchers and graduate students Overviews of current trends in exponential groups and of the classification of finite triangle groups and finite generalized tetrahedron groups are complemented by new results on a conjecture of Rosenberger and an approximation theorem A special emphasis is on algorithmic techniques and their complexity both for finitely generated groups and for finite $\mathbb{Z}$ algebras including explicit computer calculations highlighting important classical methods A further chapter surveys connections to mathematical logic in particular to universal theories of various classes of groups and contains new results on countable elementary free groups Applications to cryptography include overviews of techniques based on representations of p groups and of non commutative group actions Further applications of finitely generated groups to topology and artificial intelligence complete the volume All in all leading experts provide up to date overviews and current trends in combinatorial group theory and its connections to cryptography and other areas

Representations of Finite and Lie Groups Charles Benedict Thomas, 2004 This book provides an introduction to representations of both finite and compact groups The proofs of the basic results are given for the finite case but are so phrased as to hold without change for compact topological groups with an invariant integral replacing the sum over the group elements as an averaging tool Among the topics covered are the relation between representations and characters the construction of irreducible representations induced representations and Frobenius reciprocity Special emphasis is given to exterior powers with the symmetric group S_n as an illustrative example The book concludes with a chapter comparing the representations of the finite group $SL(2, p)$ and the non compact Lie group $SL(2, \mathbb{R})$

Varieties of Representations of Finitely Generated Groups Alexander Lubotzky, Andy R. Magid, Andy Roy Magid, 1985 The n dimensional representations over an algebraically closed characteristic zero field k of a finitely generated group are parameterized by an affine algebraic variety over k The tangent spaces of this variety are subspaces of spaces of one cocycles and thus the geometry of the variety is locally related to the cohomology of the group The cohomology is also related to the pronilpotent radical of the proalgebraic hull of the group This paper exploits these two relations to compute dimensions of representation varieties especially for nilpotent groups and their generalizations It also presents the foundations of the theory of representation varieties in an expository self contained manner

A Course on

Finite Groups H.E. Rose, 2009-12-16 Introduces the richness of group theory to advanced undergraduate and graduate students concentrating on the finite aspects Provides a wealth of exercises and problems to support self study Additional online resources on more challenging and more specialised topics can be used as extension material for courses or for further independent study **Modular Representation Theory of Finite Groups** Peter Schneider, 2012-11-27

Representation theory studies maps from groups into the general linear group of a finite dimensional vector space For finite groups the theory comes in two distinct flavours In the semisimple case for example over the field of complex numbers one can use character theory to completely understand the representations This by far is not sufficient when the characteristic of the field divides the order of the group Modular Representation Theory of finite Groups comprises this second situation Many additional tools are needed for this case To mention some there is the systematic use of Grothendieck groups leading to the Cartan matrix and the decomposition matrix of the group as well as Green's direct analysis of indecomposable representations There is also the strategy of writing the category of all representations as the direct product of certain subcategories the so called blocks of the group Brauer's work then establishes correspondences between the blocks of the original group and blocks of certain subgroups the philosophy being that one is thereby reduced to a simpler situation In particular one can measure how nonsemisimple a category a block is by the size and structure of its so called defect group All these concepts are made explicit for the example of the special linear group of two by two matrices over a finite prime field Although the presentation is strongly biased towards the module theoretic point of view an attempt is made to strike a certain balance by also showing the reader the group theoretic approach In particular in the case of defect groups a detailed proof of the equivalence of the two approaches is given This book aims to familiarize students at the masters level with the basic results tools and techniques of a beautiful and important algebraic theory Some basic algebra together with the semisimple case are assumed to be known although all facts to be used are restated without proofs in the text Otherwise the book is entirely self contained The Arcata Conference on Representations of Finite Groups, Part 1 Paul Fong, 1987 The

papers in these proceedings of the 1986 Arcata Summer Institute bear witness to the extraordinarily vital and intense research in the representation theory of finite groups The confluence of diverse mathematical disciplines has brought forth work of great scope and depth Particularly striking is the influence of algebraic geometry and cohomology theory in the modular representation theory and the character theory of reductive groups over finite fields and in the general modular representation theory of finite groups The continuing developments in block theory and the general character theory of finite groups is noteworthy The expository and research aspects of the Summer Institute are well represented by these papers

Modern Trends in Algebra and Representation Theory David Jordan, Nadia Mazza, Sibylle Schroll, 2023-08-17 Expanding upon the material delivered during the LMS Autumn Algebra School 2020 this volume reflects the fruitful connections between different aspects of representation theory Each survey article addresses a specific subject from a modern angle

beginning with an exploration of the representation theory of associative algebras followed by the coverage of important developments in Lie theory in the past two decades before the final sections introduce the reader to three strikingly different aspects of group theory Written at a level suitable for graduate students and researchers in related fields this book provides pure mathematicians with a springboard into the vast and growing literature in each area **Combinatorial Group**

Theory Roger C. Lyndon, Paul E. Schupp, 2015-03-12 From the reviews This book defines the boundaries of the subject now called combinatorial group theory it is a considerable achievement to have concentrated a survey of the subject into 339 pages This includes a substantial and useful bibliography over 1100 items the book is a valuable and welcome addition to the literature containing many results not previously available in a book It will undoubtedly become a standard reference Mathematical Reviews AMS 1979 The Representation Theory of Finite Groups W. Feit, 1982-05-01 The Representation Theory of Finite Groups *Lectures on Profinite Topics in Group Theory* Benjamin Klopsch, Nikolay Nikolov, Christopher Voll, 2011-02-10 In this book three authors introduce readers to strong approximation methods analytic pro p groups and zeta functions of groups Each chapter illustrates connections between infinite group theory number theory and Lie theory The first introduces the theory of compact p adic Lie groups The second explains how methods from linear algebraic groups can be utilised to study the finite images of linear groups The final chapter provides an overview of zeta functions associated to groups and rings Derived from an LMS EPSRC Short Course for graduate students this book provides a concise introduction to a very active research area and assumes less prior knowledge than existing monographs or original research articles Accessible to beginning graduate students in group theory it will also appeal to researchers interested in infinite group theory and its interface with Lie theory and number theory **Abstract Algebra** Celine Carstensen-Opitz, Benjamin Fine, Anja Moldenhauer, Gerhard Rosenberger, 2019-09-02 A new approach to conveying abstract algebra the area that studies algebraic structures such as groups rings fields modules vector spaces and algebras that is essential to various scientific disciplines such as particle physics and cryptology It provides a well written account of the theoretical foundations and it also includes a chapter on cryptography End of chapter problems help readers with accessing the subjects

Computational Invariant Theory Harm Derksen, Gregor Kemper, 2015-12-23 This book is about the computational aspects of invariant theory Of central interest is the question how the invariant ring of a given group action can be calculated Algorithms for this purpose form the main pillars around which the book is built There are two introductory chapters one on Gröbner basis methods and one on the basic concepts of invariant theory which prepare the ground for the algorithms Then algorithms for computing invariants of finite and reductive groups are discussed Particular emphasis lies on interrelations between structural properties of invariant rings and computational methods Finally the book contains a chapter on applications of invariant theory covering fields as disparate as graph theory coding theory dynamical systems and computer vision The book is intended for postgraduate students as well as researchers in geometry computer algebra and of course

invariant theory The text is enriched with numerous explicit examples which illustrate the theory and should be of more than passing interest More than ten years after the first publication of the book the second edition now provides a major update and covers many recent developments in the field Among the roughly 100 added pages there are two appendices authored by Vladimir Popov and an addendum by Norbert A Campo and Vladimir Popov Algebraic Groups and Number Theory Vladimir Platonov, Andrei Rapinchuk, Rachel Rowen, 1993-12-07 This milestone work on the arithmetic theory of linear algebraic groups is now available in English for the first time Algebraic Groups and Number Theory provides the first systematic exposition in mathematical literature of the junction of group theory algebraic geometry and number theory The exposition of the topic is built on a synthesis of methods from algebraic geometry number theory analysis and topology and the result is a systematic overview of almost all of the major results of the arithmetic theory of algebraic groups obtained to date *Finite Groups I* Bertram Huppert, 2025-05-05 Since its publication in 1967 Bertram Huppert's influential *Endliche Gruppen I* has remained a standard reference on group theory with its clear precise and complete exposition The present volume makes this classic text available in English for the first time updated with modern notation and notes In addition to foundational material the book contains the theory of permutation groups linear groups p groups nilpotent groups and solvable groups as well as the transfer homomorphism and ordinary representation theory All topics are fully developed and accessible to students with a basic knowledge of algebra Its comprehensive coverage and inclusion of more advanced topics make this self contained treatise an invaluable resource for graduate students and researchers *A Guide to Quantum Groups* Vyjayanthi Chari, Andrew N. Pressley, 1995-07-27 Since they first arose in the 1970s and early 1980s quantum groups have proved to be of great interest to mathematicians and theoretical physicists The theory of quantum groups is now well established as a fascinating chapter of representation theory and has thrown new light on many different topics notably low dimensional topology and conformal field theory The goal of this book is to give a comprehensive view of quantum groups and their applications The authors build on a self contained account of the foundations of the subject and go on to treat the more advanced aspects concisely and with detailed references to the literature Thus this book can serve both as an introduction for the newcomer and as a guide for the more experienced reader All who have an interest in the subject will welcome this unique treatment of quantum groups Forty Years Of Algebraic Groups, Algebraic Geometry, And Representation Theory In China: In Memory Of The Centenary Year Of Xihua Cao's Birth Jie Du, Jianpan Wang, Lei Lin, 2022-10-21 Professor Xihua Cao 1920 2005 was a leading scholar at East China Normal University ECNU and a famous algebraist in China His contribution to the Chinese academic circle is particularly the formation of a world renowned ECNU School in algebra covering research areas include algebraic groups quantum groups algebraic geometry Lie algebra algebraic number theory representation theory and other hot fields In January 2020 in order to commemorate Professor Xihua Cao's centenary birthday East China Normal University held a three day academic conference Scholars at home and

abroad gave dedications or delivered lectures in the conference This volume originates from the memorial conference collecting the dedications of scholars reminiscences of family members and 16 academic articles written based on the lectures in the conference covering a wide range of research hot topics in algebra The book shows not only scholars respect and memory for Professor Xihua Cao but also the research achievements of Chinese scholars at home and abroad

Whitaker's Books in Print, 1998 **Kleinian Groups and Hyperbolic 3-Manifolds** Y. Komori, V. Markovic, C. Series, 2003-11-10 The subject of Kleinian groups and hyperbolic 3 manifolds is currently undergoing explosively fast development with many old problems and conjectures close to resolution This volume proceedings of the Warwick workshop in September 2001 contains expositions of many of these breakthroughs including Minsky's lectures on the first half of the proof of the Ending Lamination Conjecture the Bers Density Conjecture by Brock and Bromberg the Tameness Conjecture by Kleiner and Souto the state of the art in cone manifolds by Hodgson and Kerckhoff and the counter example to Thurston's K 2 conjecture by Epstein Marden and Markovic It also contains Jørgensen's famous paper On pairs of once punctured tori in print for the first time The excellent collection of papers here will appeal to graduate students who will find much here to inspire them and established researchers who will find this valuable as a snapshot of current research Unitary Representations and Unitary Duals Manfred Einsiedler, Thomas Ward, 2025-10-30 This graduate textbook introduces the unitary representation theory of groups emphasizing applications in fields like dynamical systems It begins with the general theory and motivation then explores key classes of groups Abelian and compact groups are treated through Pontryagin duality and the Peter Weyl theorem Metabelian groups illustrate links to ergodic theory and lead to the Mackey machine Weak containment and the Fell topology are introduced through examples The final chapters apply the theory to special linear groups in dimensions two and three covering smooth vectors spectral gaps and decay of matrix coefficients The two dimensional case is examined in depth including the Kunze Stein phenomenon spectral decomposition on the hyperbolic plane and the Weil representation The book concludes with a full description of the unitary dual of $SL(2, \mathbb{R})$ and its Fell topology applying the theory to prove effective equidistribution of horocycle orbits With its focus on key examples and concrete explanations this textbook is aimed at graduate students taking first steps in unitary representation theory It builds the theory from the ground up requiring only some familiarity with functional analysis beyond standard undergraduate mathematics

The book delves into Sl2 Representations Of Finitely Presented Groups. Sl2 Representations Of Finitely Presented Groups is an essential topic that needs to be grasped by everyone, from students and scholars to the general public. This book will furnish comprehensive and in-depth insights into Sl2 Representations Of Finitely Presented Groups, encompassing both the fundamentals and more intricate discussions.

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