

Representations of Finite Groups of Lie Type

Second Edition

FRANÇOIS DIGNE and JEAN MICHEL

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Representations Of Finite Groups Of Lie Type

Paul Fong



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Modular Representations of Finite Groups of Lie Type James E. Humphreys, 2006 A comprehensive treatment of the representation theory of finite groups of Lie type over a field of the defining prime characteristic

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Representations of Finite Groups of Lie Type François Digne, Jean Michel, 2020-03-05 On its original publication this book provided the first elementary treatment of representation theory of finite groups of Lie type in book form This second edition features new material to reflect the continuous evolution of the subject including entirely new chapters on Hecke algebras Green functions and Lusztig families The authors cover the basic theory of representations of finite groups of Lie type such as linear unitary orthogonal and symplectic groups They emphasise the Curtis Alvis duality map and Mackey s theorem and the results that can be deduced from it before moving on to a discussion of Deligne Lusztig induction and Lusztig s Jordan decomposition theorem for characters The book contains the background information needed to make it a useful resource for beginning graduate students in algebra as well as seasoned researchers It includes exercises and explicit examples

Representations of Finite Groups of Lie Type François Digne, Jean Michel, 2014-05-14 In this book which is based on a graduate course taught at the University of Paris the authors aim to treat the basic theory of representations of finite groups of Lie type

The Character Theory of Finite Groups of Lie Type Meinolf Geck, Gunter Malle, 2020-02-27 A comprehensive guide to the vast literature and range of results around Lusztig s character theory of finite groups of Lie type

Representations of Finite Groups of Lie Type Hung Ngoc Nguyen, 2008 ABSTRACT Let G be a finite quasi simple group of Lie type One of the important problems in modular representation theory is to determine when the restriction of an absolutely irreducible representation of G to its proper

subgroups is still irreducible The solution of this problem is a key step towards classifying all maximal subgroups of finite classical groups We solve this problem for the cases where G is a Lie group of the following types G_2 , q_2B_2 , q_2G_2 , q and $3D_4$, q One of the main tools to approach the above problem and many others is the classification of low dimensional representations of finite groups of Lie type Low dimensional complex representations were first studied in 70 for finite classical groups and then in 50 for exceptional groups We extend the results in 70 for symplectic and orthogonal groups to a larger bound More explicitly we classify irreducible complex characters of the symplectic groups Sp_{2n} and orthogonal groups $Spin_n$ over q of degrees up to the bound D where $D \leq q^{n-1}$ for symplectic groups and $D \leq q^{n/2}$ for orthogonal groups in odd dimension and $D \leq q^{n/2}$ for orthogonal groups in even dimension

Some Aspects of the Representation Theory of Finite Groups of Lie Type Roger William Carter, 1977

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

Representation Theory of Finite Groups: a Guidebook David A. Craven, 2019-08-30 This book provides an accessible introduction to the state of the art of representation theory of finite groups Starting from a basic level that is summarized at the start the book proceeds to cover topics of current research interest including open problems and conjectures The central themes of the book are block theory and module theory of group representations which are comprehensively surveyed with a full bibliography The individual chapters cover a range of topics within the subject from blocks with cyclic defect groups to representations of symmetric groups Assuming only modest background knowledge at the level of a first graduate course in algebra this guidebook intended for students taking first steps in the field will also provide a reference for more experienced researchers Although no proofs are included end of chapter exercises make it suitable for student seminars

Modular Representations of Finite Groups of Lie Type Roger William Carter, George Lusztig, 1973

Representation Theory of Finite Groups and Finite-Dimensional Algebras Michler, Ringel, 2012-12-06 From April 1 1984 until March 31 1991 the Deutsche Forschungsgemeinschaft has sponsored the project Representation Theory of Finite Groups and Finite Dimensional Algebras The proposal for this project was submitted by B Huppert Mainz B Fischer Bielefeld G Michler Essen H Pahlings Aachen and C M Ringel Bielefeld in order to strengthen the interaction between the different research areas in representation theory The Deutsche Forschungsgemeinschaft has given many research positions and fellowships for young algebraists enabling them to do

research at their own universities or as visitors at well known research institutions in America Australia England and France The whole project benefitted very much from an extensive exchange programme between German and American scientists sponsored by the Deutsche Forschungsgemeinschaft and by the National Science Foundation of the United States This volume presents lectures given in a final conference and reports by members of the project It is divided into two parts The first part contains seven survey articles describing recent advances in different areas of representation theory These articles do not only concentrate on the work done by the German research groups but also inform on major developments of the subject at all The volume omits those topics already treated in book form In particular it does not contain a survey on K

Complex Representation Theory of Finite Groups of Lie Type R.W. Carter,1978 **Modular Representation Theory of Finite Groups** Michael J. Collins,Brian J. Parshall,Leonard L. Scott,2011-07-11 This book is an outgrowth of a Research Symposium on the Modular Representation Theory of Finite Groups held at the University of Virginia in May 1998 The main themes of this symposium were representations of groups of Lie type in nondefining or cross characteristic and recent developments in block theory Series of lectures were given by M Geck A Kleshchev and R Rouquier and their brief was to present material at the leading edge of research but accessible to graduate students working in the field The first three articles are substantial expansions of their lectures and each provides a complete account of a significant area of the subject together with an extensive bibliography The remaining articles are based on some of the other lectures given at the symposium some again are full surveys of the topic covered while others are short but complete research articles The opportunity has been taken to produce a book of enduring value so that this is not a conference proceedings in the conventional sense Material has been updated so that this book through its own content and in its extensive bibliographies will serve as an invaluable resource for all those working in the area whether established researchers or graduate students who wish to gain a general knowledge of the subject starting from a single source Multiplicities of Principal Series Representations of Finite Groups of Lie Type Kathy McGovern,1980 **An Approach to the Irreducible Representations of Finite Groups of Lie Type Through Block Theory and Special Conjugacy Classes** Richard Alan Boyce,1980

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.

Representations of Hecke Algebras at Roots of Unity Meinolf Geck, Nicolas Jacon, 2011-05-18. The modular representation theory of Iwahori-Hecke algebras and this theory's connection to groups of Lie type is an area of rapidly expanding interest; it is one that has also seen a number of breakthroughs in recent years. In classifying the irreducible representations of Iwahori-Hecke algebras at roots of unity, this book is a particularly valuable addition to current research in this field. Using the framework provided by the Kazhdan-Lusztig theory of cells, the authors develop an analogue of James' 1970 characteristic-free approach to the representation theory of Iwahori-Hecke algebras in general. Presenting a systematic and unified treatment of representations of Hecke algebras at roots of unity, this book is unique in its approach and includes new results that have not yet been published in book form. It also serves as background reading to further active areas of current research, such as the theory of affine Hecke algebras and Cherednik algebras. The main results of this book are obtained by an interaction of several branches of mathematics, namely the theory of Fock spaces for quantum affine Lie algebras and Ariki's theorem, the combinatorics of crystal bases, the theory of Kazhdan-Lusztig bases and cells, and computational methods. This book will be of use to researchers and graduate students in representation theory as well as any researchers outside of the field with an interest in Hecke algebras.

The Inductive Blockwise Alperin Weight Condition for the Chevalley Groups ${}^F_4(q)$ Jianbei An, Gerhard Hiss, Frank Lübeck, 2025-01-23. View the abstract.

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