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Automorphic Forms and L-Functions for the Group GL(n,R)-Dorian Goldfeld 2006-08-03 L-functions associated to automorphic forms encode all classical number theoretic information. They are akin to elementary particles in physics. This 2006 book provides an entirely self-contained introduction to the theory of L-functions in a style accessible to graduate students with a basic knowledge of classical analysis, complex variable theory, and algebra. Also within the volume are many new results not yet found in the literature. The exposition provides complete detailed proofs of results in an easy-to-read format using many examples and without the need to know and remember many complex definitions. The main themes of the book are first worked out for GL(2,R) and GL(3,R), and then for the general case of GL(n,R). In an appendix to the book, a set of Mathematica functions is presented, designed to allow the reader to explore the theory from a computational point of view. L-Functions and Automorphic Forms-Jan Hendrik Bruinier 2018-02-22 This book presents a collection of carefully refereed research articles and lecture notes stemming from the Conference "Automorphic Forms and L-Functions", held at the University of Heidelberg in 2016. The theory of automorphic forms and their associated L-functions is one of the central research areas in modern number theory, linking number theory, arithmetic geometry, representation theory, and complex analysis in many profound ways. The 19 papers cover a wide range of topics within the scope of the conference, including automorphic L-functions and their special values, p-adic modular forms, Eisenstein series, Borcherds products, automorphic periods, and many more. Automorphic Forms, Representations and L -Functions-Armand Borel 1979-06-30 Part 2 contains sections on Automorphic representations and L -functions, Arithmetical algebraic geometry and L -functions Automorphic Forms and L-functions: Local aspects-David Ginzburg 2009 Automorphic Forms and L-functions: Global aspects-Stephen S. Gelbart 2009 This book is the first of two volumes, which represent leading themes of current research in automorphic forms and representation theory of reductive groups over local fields. Articles in this volume mainly represent global aspects of automorphic forms. Among the topics are the trace formula; functoriality; representations of reductive groups over local fields; the relative trace formula and periods of automorphic forms; Rankin - Selberg convolutions and L-functions; and, p-adic L-functions. The articles are written by leading researchers in the field, and bring the reader, advanced graduate students and researchers alike, to the frontline of the vigorous research in these deep, vital topics. The companion volume ("Contemporary Mathematics, Volume 489") is devoted to local aspects of automorphic forms. Multiple Dirichlet Series, L-functions and Automorphic Forms-Daniel Bump 2012-07-09 Multiple Dirichlet Series, L-functions and Automorphic Forms gives the latest advances in the rapidly developing subject of Multiple Dirichlet Series, an area with origins in the theory of automorphic forms that exhibits surprising and deep connections to crystal graphs and mathematical physics. As such, it represents a new way in which areas including number theory, combinatorics, statistical mechanics, and quantum groups are seen to fit together. The volume also includes papers on automorphic forms and L-functions and related number-theoretic topics. This volume will be a valuable resource for graduate students and researchers in number theory, combinatorics, representation theory, mathematical physics, and special functions. Contributors: J. Beineke, B. Brubaker, D. Bump, G. Chinta, G. Cornelissen, C.A. Diaconu, S. Frechette, S. Friedberg, P. Garrett, D. Goldfeld, P.E. Gunnells, B. Heim, J. Hundley, D. Ivanov, Y. Komori, A.V. Kontorovich, O. Lorscheid, K. Matsumoto, P.J. McNamara, S.J. Patterson, M. Suzuki, H. Tsumura. Automorphic Forms, Shimura Varieties, and L-functions-Laurent Clozel 1990 Elliptic Curves, Modular Forms, and Their L-functions-Alvaro Lozano-Robledo 2011 Many problems in number theory have simple statements, but their solutions require a deep understanding of algebra, algebraic geometry, complex analysis, group representations, or a combination of all four. The original simply stated problem can be obscured in the depth of the theory developed to understand it. This book is an introduction to some of these problems, and an overview of the theories used nowadays to attack them, presented so that the number theory is always at the forefront of the discussion. Lozano-Robledo gives an introductory survey of elliptic curves, modular forms, and L -functions. His main goal is to provide the reader with the big picture of the surprising connections among these three families of mathematical objects and their meaning for number theory. As a case in point, Lozano-Robledo explains the modularity theorem and its famous consequence, Fermat's Last Theorem. He also discusses the Birch and Swinnerton-Dyer Conjecture and other modern conjectures. The book begins with some motivating problems and includes numerous concrete examples throughout the text, often involving actual numbers, such as $3, 4, 5, \frac{3344161}{747348}$, and $\frac{2244035177043369699245575130906674863160948472041}{8912332268928859588025535178967163570016480830}$. The theories of elliptic curves, modular forms, and L -functions are too vast to be covered in a single volume, and their proofs are outside the scope of the undergraduate curriculum. However, the primary objects of study, the statements of the main theorems, and their corollaries are within the grasp of advanced undergraduates. This book concentrates on motivating the definitions, explaining the statements of the theorems and conjectures, making connections, and providing lots of examples, rather than dwelling on the hard proofs. The book succeeds if, after reading the text, students feel compelled to study elliptic curves and modular forms in all their glory. Lectures on Automorphic L-functions-James W. Cogdell James W. Cogdell, Lectures on L -functions, converse theorems, and functoriality for GL_n : Preface Modular forms and their L -functions Automorphic forms Automorphic representations Fourier expansions and multiplicity one theorems Eulerian integral representations Local L -functions: The non-Archimedean case The unramified calculation Local L -functions: The Archimedean case Global L -functions Converse theorems Functoriality Functoriality for the classical groups Functoriality for the classical groups, II Henry H. Kim, Automorphic L -functions: Introduction Chevalley groups and their properties Cuspidal representations L -groups and automorphic L -functions Induced representations Eisenstein series and constant terms L -functions in the constant terms Meromorphic continuation of L -functions Generic representations and their Whittaker models Local coefficients and non-constant terms Local Langlands correspondence Local L -functions and functional equations Normalization of intertwining operators Holomorphy and bounded in vertical strips Langlands functoriality conjecture Converse theorem of Cogdell and Piatetski-Shapiro Functoriality of the symmetric cube Functoriality of the symmetric fourth Bibliography M. Ram Murty, Applications of symmetric power L -functions: Preface The Sato-Tate conjecture Maass wave forms The Rankin-Selberg method Oscillations of Fourier coefficients of cusp forms Poincare series Kloosterman sums and Selberg's conjecture Refined estimates for Fourier coefficients of cusp forms Twisting and averaging of L -series The Kim-Sarnak theorem Introduction to Artin L -functions Zeros and poles of Artin L -functions The Langlands-Tunnell theorem Bibliography Automorphic Representations and L-Functions for the General Linear Group-Dorian Goldfeld 2011 This modern, graduate-level textbook does not assume prior knowledge of representation theory. Includes numerous concrete examples and exercises. Six Short Chapters on Automorphic Forms and L-functions-Ze-Li Dou 2012-12-15 "Six Short Chapters on Automorphic Forms and L-functions" treats the period conjectures of Shimura and the moment conjecture. These conjectures are of central importance in contemporary number theory, but have hitherto remained little discussed in expository form. The book is divided into six short and relatively independent chapters, each with its own theme, and presents a motivated and lively account of the main topics, providing professionals an overall view of the conjectures and providing researchers intending to specialize in the area a guide to the relevant literature. Ze-Li Dou and Qiao Zhang are both associate professors of Mathematics at Texas Christian University, USA. Automorphic Forms, Representations and L -Functions-Symposium in Pure Mathematics 1979 Part 1 contains sections on Reductive groups, representations, Automorphic forms and representations) Automorphic Representations and L-Functions for the General Linear Group-Dorian Goldfeld 2011-04-21 This graduate-level textbook provides an elementary exposition of the theory of automorphic representations and L-functions for the general linear group in an adelic setting. Definitions are kept to a minimum and repeated when reintroduced so that the book is accessible from any entry point, and with no prior knowledge of representation theory. The book includes concrete examples of global and local representations of GL(n), and presents their associated L-functions. In Volume 1, the theory is developed from first principles for GL(1), then carefully extended to GL(2) with complete detailed proofs of key theorems. Several proofs are presented for the first time, including Jacquet's simple and elegant proof of the tensor product theorem. In Volume 2, the higher rank situation of GL(n) is given a detailed treatment. Containing numerous exercises by Xander Faber, this book will motivate students and researchers to begin working in this fertile field of research. Topics in Classical Automorphic Forms-Henryk Iwaniec 1997 The main purpose of the book is to present the reader with various perspectives of the theory of automorphic forms. In addition to detailed and often nonstandard exposition of familiar topics of the theory, with a particular emphasis on analytic aspects, special

attention is paid to such subjects as theta-functions and representations of integers by quadratic forms.

Automorphic Forms on GL(3,TR)-D. Bump 2006-12-08

Automorphic Representations and L-Functions for the General Linear Group-Dorian Goldfeld 2011-04-21 This graduate-level textbook provides an elementary exposition of the theory of automorphic representations and L-functions for the general linear group in an adelic setting. Definitions are kept to a minimum and repeated when reintroduced so that the book is accessible from any entry point, and with no prior knowledge of representation theory. The book includes concrete examples of global and local representations of GL(n), and presents their associated L-functions. In Volume 1, the theory is developed from first principles for GL(1), then carefully extended to GL(2) with complete detailed proofs of key theorems. Several proofs are presented for the first time, including Jacquet's simple and elegant proof of the tensor product theorem. In Volume 2, the higher rank situation of GL(n) is given a detailed treatment. Containing numerous exercises by Xander Faber, this book will motivate students and researchers to begin working in this fertile field of research.

Automorphic Representations, L-Functions and Applications: Progress and Prospects-James W. Cogdell 2011-06-24 This volume is the proceedings of the conference on Automorphic Representations, L-functions and Applications: Progress and Prospects, held at the Department of Mathematics of The Ohio State University, March 27-30, 2003, in honor of the 60th birthday of Steve Rallis. The theory of automorphic representations, automorphic L-functions and their applications to arithmetic continues to be an area of vigorous and fruitful research. The contributed papers in this volume represent many of the most recent developments and directions, including Rankin-Selberg L-functions (Bump, Ginzburg-Jiang-Rallis, Lapid-Rallis) the relative trace formula (Jacquet, Mao-Rallis) automorphic representations (Gan-Gurevich, Ginzburg-Rallis-Soudry) representation theory of p-adic groups (Baruch, Kudla-Rallis, Møeglin, Cogdell-Piatetski-Shapiro-Shahidi) p-adic methods (Harris-Li-Skinner, Vigneras), and arithmetic applications (Chinta-Friedberg-Hoffstein). The survey articles by Bump, on the Rankin-Selberg method, and by Jacquet, on the relative trace formula, should be particularly useful as an introduction to the key ideas about these important topics. This volume should be of interest both to researchers and students in the area of automorphic representations, as well as to mathematicians in other areas interested in having an overview of current developments in this important field.

Lectures on Automorphic L-functions-James W. Cogdell 2009 This book provides a comprehensive account of the crucial role automorphic L -functions play in number theory and in the Langlands program, especially the Langlands functoriality conjecture. There has been a recent major development in the Langlands functoriality conjecture by the use of automorphic L -functions, namely, by combining converse theorems of Cogdell and Piatetski-Shapiro with the Langlands-Shahidi method. This book provides a step-by-step introduction to these developments and explains how the Langlands functoriality conjecture implies solutions to several outstanding conjectures in number theory, such as the Ramanujan conjecture, Sato-Tate conjecture, and Artin's conjecture. It would be ideal for an introductory course in the Langlands program. Titles in this series are co-published with The Fields Institute for Research in Mathematical Sciences (Toronto, Ontario, Canada). Table of Contents: James W. Cogdell, Lectures on L -functions, converse theorems, and functoriality for GL_n ; Preface; Modular forms and their L -functions; Automorphic forms; Automorphic representations; Fourier expansions and multiplicity one theorems; Eulerian integral representations; Local L -functions: The non-Archimedean case; The unramified calculation; Local L -functions: The Archimedean case; Global L -functions; Converse theorems; Functoriality; Functoriality for the classical groups; Functoriality for the classical groups, II. Henry H. Kim, Automorphic L -functions: Introduction; Chevalley groups and their properties; Cuspidal representations; L -groups and automorphic L -functions; Induced representations; Eisenstein series and constant terms; L -functions in the constant terms; Meromorphic continuation of L -functions; Generic representations and their Whittaker models; Local coefficients and non-constant terms; Local Langlands correspondence; Local L -functions and functional equations; Normalization of intertwining operators; Holomorphy and bounded in vertical strips; Langlands functoriality conjecture; Converse theorem of Cogdell and Piatetski-Shapiro; Functoriality of the symmetric cube; Functoriality of the symmetric fourth; Bibliography. M. Ram Murty, Applications of symmetric power L -functions: Preface; The Sato-Tate conjecture; Maass wave forms; The Rankin-Selberg method; Oscillations of Fourier coefficients of cusp forms; Poincare series; Kloosterman sums and Selberg's conjecture; Refined estimates for Fourier coefficients of cusp forms; Twisting and averaging of L -series; The Kim-Sarnak theorem; Introduction to Artin L -functions; Zeros and poles of Artin L -functions; The Langlands-Tunnell theorem; Bibliography. This is a reprint of the 2004 original. (FIM/20.S)

L-Functions and the Oscillator Representation-Stephen Rallis 2006-11-15 These notes are concerned with showing the relation between L-functions of classical groups (*F1 in particular) and *F2 functions arising from the oscillator representation of the dual reductive pair *F1 *F3 O(Q). The problem of measuring the nonvanishing of a *F2 correspondence by computing the Petersson inner product of a *F2 lift from *F1 to O(Q) is considered. This product can be expressed as the special value of an L-function (associated to the standard representation of the L-group of *F1) times a finite number of local Euler factors (measuring whether a given local representation occurs in a given oscillator representation). The key ideas used in proving this are (i) new Rankin integral representations of standard L-functions, (ii) see-saw dual reductive pairs and (iii) Siegel-Weil formula. The book addresses readers who specialize in the theory of automorphic forms and L-functions and the representation theory of Lie groups. N

Automorphic Forms and Galois Representations-Fred Diamond 2014-10-16 Part one of a two-volume collection exploring recent developments in number theory related to automorphic forms and Galois representations.

Automorphic Forms and Representations-Daniel Bump 1998-11-28 This book takes advanced graduate students from the foundations to topics on the research frontier. Advanced Analytic Number Theory: L-Functions-Carlos J. Moreno 2005 Since the pioneering work of Euler, Dirichlet, and Riemann, the analytic properties of L-functions have been used to study the distribution of prime numbers. With the advent of the Langlands Program, L-functions have assumed a greater role in the study of the interplay between Diophantine questions about primes and representation theoretic properties of Galois representations. The present book provides a complete introduction to the most significant class of L-functions: the Artin-Hecke L-functions associated to finite-dimensional representations of Weil groups and to automorphic L-functions of principal type on the general linear group. In addition to establishing functional equations, growth estimates, and non-vanishing theorems, a thorough presentation of the explicit formulas of Riemann type in the context of Artin-Hecke and automorphic L-functions is also given. The survey is aimed at mathematicians and graduate students who want to learn about the modern analytic theory of L-functions and their applications in number theory and in the theory of automorphic representations. The requirements for a profitable study of this monograph are a knowledge of basic number theory and the rudiments of abstract harmonic analysis on locally compact abelian groups.

Automorphic Forms on GL(2)-H. Jacquet 2006-11-15

Automorphic Forms-Anton Deitmar 2012-08-29 Automorphic forms are an important complex analytic tool in number theory and modern arithmetic geometry. They played for example a vital role in Andrew Wiles's proof of Fermat's Last Theorem. This text provides a concise introduction to the world of automorphic forms using two approaches: the classic elementary theory and the modern point of view of adèles and representation theory. The reader will learn the important aims and results of the theory by focussing on its essential aspects and restricting it to the 'base field' of rational numbers. Students interested for example in arithmetic geometry or number theory will find that this book provides an optimal and easily accessible introduction into this topic.

Eisenstein Series and Automorphic Representations-Philipp Fleig 2018-06-30 Detailed exposition of automorphic representations and their relation to string theory, for mathematicians and theoretical physicists.

The Conference on L-Functions-Lin Weng 2007 This invaluable volume collects papers written by many of the world's top experts on L-functions. It not only covers a wide range of topics from algebraic and analytic number theories, automorphic forms, to geometry and mathematical physics, but also treats the theory as a whole. The contributions reflect the latest, most advanced and most important aspects of L-functions. In particular, it contains Hida's lecture notes at the conference and at the Eigenvariety semester in Harvard University and Weng's detailed account of his works on high rank zeta functions and non-abelian L-functions.

p-Adic Automorphic Forms on Shimura Varieties-Haruzo Hida 2012-12-06 In the early years of the 1980s, while I was visiting the Institute for Advanced Study (IAS) at Princeton as a postdoctoral member, I got a fascinating view, studying congruence modulo a prime among elliptic modular forms, that an automorphic L-function of a given algebraic group G should have a canonical p-adic counterpart of several variables. I immediately decided to find out the reason behind this phenomenon and to

develop the theory of ordinary p-adic automorphic forms, allocating 10 to 15 years from that point, putting off the intended arithmetic study of Shimura varieties via L-functions and Eisenstein series (for which I visited IAS). Although it took more than 15 years, we now know (at least conjecturally) the exact number of variables for a given G, and it has been shown that this is a universal phenomenon valid for holomorphic automorphic forms on Shimura varieties and also for more general (nonholomorphic) cohomological automorphic forms on automorphic manifolds (in a markedly different way). When I was asked to give a series of lectures in the Automorphic Semester in the year 2000 at the Emile Borel Center (Centre Emile Borel) at the Poincare Institute in Paris, I chose to give an exposition of the theory of p-adic (ordinary) families of such automorphic forms p-adic analytically depending on their weights, and this book is the outgrowth of the lectures given there. An Introduction to the Langlands Program-Joseph Bernstein 2013-12-11 This book presents a broad, user-friendly introduction to the Langlands program, that is, the theory of automorphic forms and its connection with the theory of L-functions and other fields of mathematics. Each of the twelve chapters focuses on a particular topic devoted to special cases of the program. The book is suitable for graduate students and researchers.

Automorphic Forms and Related Topics-Samuele Anni 2019-06-19 This volume contains the proceedings of the Building Bridges: 3rd EU/US Summer School and Workshop on Automorphic Forms and Related Topics, which was held in Sarajevo from July 11–22, 2016. The articles summarize material which was presented during the lectures and speed talks during the workshop. These articles address various aspects of the theory of automorphic forms and its relations with the theory of L-functions, the theory of elliptic curves, and representation theory. In addition to mathematical content, the workshop held a panel discussion on diversity and inclusion, which was chaired by a social scientist who has contributed to this volume as well. This volume is intended for researchers interested in expanding their own areas of focus, thus allowing them to “build bridges” to mathematical questions in other fields.

Modular Forms: A Classical Approach-Henri Cohen 2017-08-02 The theory of modular forms is a fundamental tool used in many areas of mathematics and physics. It is also a very concrete and “fun” subject in itself and abounds with an amazing number of surprising identities. This comprehensive textbook, which includes numerous exercises, aims to give a complete picture of the classical aspects of the subject, with an emphasis on explicit formulas. After a number of motivating examples such as elliptic functions and theta functions, the modular group, its subgroups, and general aspects of holomorphic and nonholomorphic modular forms are explained, with an emphasis on explicit examples. The heart of the book is the classical theory developed by Hecke and continued up to the Atkin-Lehner-Li theory of newforms and including the theory of Eisenstein series, Rankin-Selberg theory, and a more general theory of theta series including the Weil representation. The final chapter explores in some detail more general types of modular forms such as half-integral weight, Hilbert, Jacobi, Maass, and Siegel modular forms. Some “gems” of the book are an immediately implementable trace formula for Hecke operators, generalizations of Haberland’s formulas for the computation of Petersson inner products, W. Li’s little-known theorem on the diagonalization of the full space of modular forms, and explicit algorithms due to the second author for computing Maass forms. This book is essentially self-contained, the necessary tools such as gamma and Bessel functions, Bernoulli numbers, and so on being given in a separate chapter.

Modular Forms-Toshitsune Miyake 2006-02-17 This book is a translation of the earlier book written by Koji Doi and the author, who revised it substantially for this English edition. It offers the basic knowledge of elliptic modular forms necessary to understand recent developments in number theory. It also treats the unit groups of quaternion algebras, rarely dealt with in books; and in the last chapter, Eisenstein series with parameter are discussed following the recent work of Shimura.

Introduction to the Arithmetic Theory of Automorphic Functions-Goro Shimura 1971-08-21 The theory of automorphic forms is playing increasingly important roles in several branches of mathematics, even in physics, and is almost ubiquitous in number theory. This book introduces the reader to the subject and in particular to elliptic modular forms with emphasis on their number-theoretical aspects. After two chapters geared toward elementary levels, there follows a detailed treatment of the theory of Hecke operators, which associate zeta functions to modular forms. At a more advanced level, complex multiplication of elliptic curves and abelian varieties is discussed. The main question is the construction of abelian extensions of certain algebraic number fields, which is traditionally called “Hilbert’s twelfth problem.”

Another advanced topic is the determination of the zeta function of an algebraic curve uniformized by modular functions, which supplies an indispensable background for the recent proof of Fermat’s last theorem by Wiles.

Modern Analysis of Automorphic Forms By Example-Paul Garrett 2018-08-31 Volume 1 of a two-volume introduction to the analytical aspects of automorphic forms, featuring proofs of critical results with examples.

Automorphic Forms and Zeta Functions-Siegfried Böcherer 2006-01 This volume contains a valuable collection of articles presented at a conference on Automorphic Forms and Zeta Functions in memory of Tsuneeo Arakawa, an eminent researcher in modular forms in several variables and zeta functions. The book begins with a review of his works, followed by 16 articles by experts in the fields including H Aoki, R Berndt, K Hashimoto, S Hayashida, Y Hironaka, H Katsurada, W Kohlen, A Krieg, A Murase, H Narita, T Oda, B Roberts, R Schmidt, R Schulze-Pillot, N Skoruppa, T Sugano, and D Zagier. A variety of topics in the theory of modular forms and zeta functions are covered: Theta series and the basis problems, Jacobi forms, automorphic forms on $Sp(1, q)$, double zeta functions, special values of zeta and L-functions, many of which are closely related to Arakawa’s works. This collection of papers illustrates Arakawa’s contributions and the current trends in modular forms

in several variables and related zeta functions. Contents: Tsuneeo Arakawa and His Works; Estimate of the Dimensions of Hilbert Modular Forms by Means of Differential Operator (H Aoki); Marsden-Weinstein Reduction, Orbits and Representations of the Jacobi Group (R Berndt); On Eisenstein Series of Degree Two for Squarefree Levels and the Genus Version of the Basis Problem I (S Bocherer); Double Zeta Values and Modular Forms (H Gangl et al.); Type Numbers and Linear Relations of Theta Series for Some General Orders of Quaternion Algebras (K Hashimoto); Skewholomorphic Jacobi Forms of Higher Degree (S Hayashida); A Hermitian Analog of the Schottky Form (M Hentschel & A Krieg); The Siegel Series and Spherical Functions on $O(2n)/(O(n) \times O(n))$ (Y Hironaka & F Sati); Koecher-Maa Series for Real Analytic Siegel Eisenstein Series (T Ibukiyama & H Katsurada); A Short History on Investigation of the Special Values of Zeta and L-Functions of Totally Real Number Fields (T Ishii & T Oda); Genus Theta Series, Hecke Operators and the Basis Problem for Eisenstein Series (H Katsurada & R Schulze-Pillot); The Quadratic Mean of Automorphic L-Functions (W Kohlen et al.); Inner Product Formula for Kudla Lift (A Murase & T Sugano); On Certain Automorphic Forms of $Sp(1, q)$ (Arakawa’s Results and Recent Progress) (H Narita); On Modular Forms for the Paramodular Group (B Roberts & R Schmidt); $SL(2, \mathbb{Z})$ -Invariant Spaces Spanned by Modular Units (N-P Skoruppa & W Eholzer). Readership: Researchers and graduate students in number theory or representation theory as well as in mathematical physics or combinatorics.

Arithmetic of L-functions-Cristian Popescu 2011 The overall theme of the 2009 IAS/PCMI Graduate Summer School was connections between special values of L -functions and arithmetic, especially the Birch and Swinnerton-Dyer Conjecture and Stark’s Conjecture. These conjectures are introduced and discussed in depth, and progress made over the last 30 years is described. This volume contains the written versions of the graduate courses delivered at the summer school. It would be a suitable text for advanced graduate topics courses on the Birch and Swinnerton-Dyer Conjecture and/or Stark’s Conjecture. The book will also serve as a reference volume for experts in the field.

Hecke’s L-functions-Kenkichi Iwasawa 2019-09-03 This volume contains the notes originally made by Kenkichi Iwasawa in his own handwriting for his lecture course at Princeton University in 1964. These notes give a beautiful and completely detailed account of the adelic approach to Hecke’s L-functions attached to any number field, including the proof of analytic continuation, the functional equation of these L-functions, and the class number formula arising from the Dedekind zeta function for a general number field. This adelic approach was discovered independently by Iwasawa and Tate around 1950 and marked the beginning of the whole modern adelic approach to automorphic forms and L-series. While Tate’s thesis at Princeton in 1950 was finally published in 1967 in the volume Algebraic Number Theory, edited by Cassels and Frohlich, no detailed account of Iwasawa’s work has been published until now, and this volume is intended to fill the gap in the literature of one of the key areas of modern number theory. In the final chapter, Iwasawa elegantly explains some important classical results, such as the distribution of prime ideals and the class number formulae for cyclotomic fields.

Explicit Constructions of Automorphic L-Functions-Stephen Gelbart 2006-11-15 The goal of this research monograph is to derive the analytic continuation and functional equation of the L-functions attached by R.P. Langlands to automorphic representations of reductive algebraic groups. The first part of the book (by Piatetski-Shapiro and Rallis) deals with L-functions for the simple classical groups; the second part (by Gelbart and Piatetski-Shapiro) deals with non-simple groups of the form $GL(n)$, with G a quasi-split reductive group of split rank n. The method of proof is to construct certain explicit zeta-integrals of Rankin-Selberg type which interpolate the relevant Langlands L-functions and can be analyzed via the theory of Eisenstein series and intertwining operators. This is the first time such an approach has been applied to such general classes of groups. The flavor of the local theory is decidedly representation theoretic, and the work should be of interest to researchers in group representation theory as well as number theory.

Spectral Methods of Automorphic Forms-Henryk Iwaniec 1995 Automorphic forms are one of the central topics of analytic number theory. In fact, they sit at the confluence of analysis, algebra, geometry, and number theory. In this book, Henryk Iwaniec once again displays his penetrating insight, powerful analytic techniques, and lucid writing style. The first edition of this book was an underground classic, both as a textbook and as a respected source for results, ideas, and references. Iwaniec treats the spectral theory of automorphic forms as the study of the space of L^2 functions on the upper half plane modulo a discrete subgroup. Key topics include Eisenstein series, estimates of Fourier coefficients, Kloosterman sums, the Selberg trace formula and the theory of small eigenvalues. Henryk Iwaniec was awarded the 2002 Cole Prize for his fundamental contributions to number theory.

A Window Into Zeta and Modular Physics-Klaus Kirsten 2010-05-24 "A book consisting of lectures that are part of the series of MSRI workshops and that introduce students and researchers to a portion of the intriguing world of theoretical physics"--

Non-vanishing of L-Functions and Applications-M. Ram Murty 2012-01-05 This volume develops methods for proving the non-vanishing of certain L-functions at points in the critical strip. It begins at a very basic level and continues to develop, providing readers with a theoretical foundation that allows them to understand the latest discoveries in the field.