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Singular Algebraic Curves Moduli of Curves Lectures on Curves on an Algebraic Surface Phase Response Curves in Neuroscience Elliptic Curves over Number Fields with Prescribed Reduction Type Smarandache curves of some special curves in the Galilean 3-space Differential Geometry of Curves and Surfaces Algebraic Geometry I Pencils of Cubics and Algebraic Curves in the Real Projective Plane Plane Algebraic Curves Curves in Motion The Field Practice of Laying Out Circular Curves for Rail-roads Conics and Cubics A Treatise on the Higher Plane Curves Probabilistic Parametric Curves for Sequence Modeling Topology of Algebraic Curves Arithmetic on Elliptic Curves with Complex Multiplication Elliptic Curves Transition Curves of 330 Mev Bremsstrahlung Differential and Symplectic Topology of Knots and Curves Elliptic Curves in Cryptography Differential Geometry of Curves and Surfaces Geometry of Curves Plane Algebraic Curves Estimated Flow-duration Curves for Selected Ungaged Sites in the Cimarron and Lower Arkansas River Basins in Kansas Differential Geometry of Curves and Surfaces Space-Filling Curves New Contributions to R-curves and Bridging Stresses - Applications of Weight Functions Site Index Curves for Young-growth Incense-cedar of the Westside Sierra Nevada Algebraic Curves over a Finite Field Parametric Geometry of Curves and Surfaces The Moduli Space of Curves Geometry and Interpolation of Curves and Surfaces Algebraic Curves Over Finite Fields Plane Algebraic Curves Rigid Geometry of Curves and Their Jacobians Designing Fair Curves and Surfaces Twisted Teichmüller Curves On Curves in a Complex Hilbert Space Atlas of Stress-strain Curves

Differential Geometry of Curves and Surfaces Nov 06 2020 Central topics covered include curves, surfaces, geodesics, intrinsic geometry, and the Alexandrov global angle comparision theorem Many nontrivial and original problems (some with hints and solutions) Standard theoretical material is combined with more difficult theorems and complex problems, while maintaining a clear distinction between the two levels
The Field Practice of Laying Out Circular Curves for Rail-roads Jan 21 2022
The Moduli Space of Curves May 01 2020 The moduli space Mg of curves of fixed genus g – that is, the algebraic variety that parametrizes all curves of genus g – is one of the most intriguing objects of study in algebraic geometry these days. Its appeal results not only from its beautiful mathematical structure but also from recent developments in theoretical physics, in particular in conformal field theory. Leading experts in the field explore in this volume both the structure of the moduli space of curves and its relationship with physics through quantum cohomology. Altogether, this is a lively volume that testifies to the ferment in the field and gives an excellent view of the state of the art for both mathematicians and theoretical physicists. It is a persuasive example of the famous Wignes comment, and its converse, on "the unreasonable effectiveness of mathematics in the natural science." Witteen's conjecture in 1990 describing the intersection behavior of tautological classes in the cohomology of Mg arose directly from string theory. Shortly thereafter a stunning proof was provided by Kontsevich who, in this volume, describes his solution to the problem of counting rational curves on certain algebraic varieties and includes numerous suggestions for further development. The same problem is given an elegant treatment in a paper by Manin. There follows a number of contributions to the geometry, cohomology, and arithmetic of the moduli spaces of curves. In addition, several contributors address quantum cohomology and conformal field theory.
Algebraic Curves Over Finite Fields Feb 28 2020 Develops the theory of algebraic curves over finite fields, their zeta and L-functions and the theory of algebraic geometric Goppa codes.
Parametric Geometry of Curves and Surfaces Jun 01 2020 This textbook provides a thorough introduction to the differential geometry of parametrized curves and surfaces, along with a wealth of applications to specific architectural elements. Geometric elements in architecture respond to practical, physical and aesthetic needs. Proper understanding of the mathematics underlying the geometry provides control over the construction. This book relates the classical mathematical theory of parametrized curves and surfaces to multiple applications in architecture. The presentation is mathematically complete with numerous figures and animations illustrating the theory, and special attention is given to some of the recent trends in the field. Solved exercises are provided to see the theory in practice. Intended as a textbook for lecture courses, Parametric Geometry of Curves and Surfaces is suitable for mathematically-inclined students in engineering, architecture and related fields, and can also serve as a textbook for traditional differential geometry courses to mathematics students. Researchers interested in the mathematics of architecture or computer-aided design will also value its combination of precise mathematics and architectural examples.
Differential and Symplectic Topology of Knots and Curves May 13 2021 This book presents a collection of papers on two related topics: topology of knots and knot-like objects (such as curves on surfaces) and topology of Legendrian knots and links in 3-dimensional contact manifolds. Featured is the work of international experts in knot theory ("quantum" knot invariants, knot invariants of finite type), in symplectic and contact topology, and in singularity theory. The interplay of diverse methods from these fields makes this volume unique in the study of Legendrian knots and knot-like objects such as wave fronts. A particularly enticing feature of the volume is its international significance. The volume successfully embodies a fine collaborative effort by worldwide experts from Belgium, France, Germany, Israel, Japan, Poland, Russia, Sweden, the UK, and the US.
Elliptic Curves in Cryptography Apr 11 2021 This book explains the mathematics behind practical implementations of elliptic curve systems.
Plane Algebraic Curves Jan 09 2021 This is an excellent introduction to algebraic geometry, which assumes only standard undergraduate mathematical topics: complex analysis, rings and fields, and topology. Reading this book will help establish the geometric intuition that lies behind the more advanced ideas and techniques used in the study of higher-dimensional varieties.
Plane Algebraic Curves Mar 23 2022 In a detailed and comprehensive introduction to the theory of plane algebraic curves, the authors examine this classical area of mathematics that both figured prominently in ancient Greek studies and remains a source of inspiration and a topic of research to this day. Arising from notes for a course given at the University of Bonn in Germany, "Plane Algebraic Curves" reflects the authors' concern for the student audience through its emphasis on motivation, development of imagination, and understanding of basic ideas. As classical objects, curves may be viewed from many angles. This text also provides a foundation for the comprehension and exploration of modern work on singularities. --- In the first chapter one finds many special curves with very attractive geometric presentations – the wealth of illustrations is a distinctive characteristic of this book – and an introduction to projective geometry (over the complex numbers). In the second chapter one finds a very simple proof of Bezout's theorem and a detailed discussion of cubics. The heart of this book – and how else could it be with the first author – is the chapter on the resolution of singularities (always over the complex numbers). (...) Especially remarkable is the outlook to further work on the topics discussed, with numerous references to the literature. Many examples round off this successful representation of a classical and yet still very much alive subject. (Mathematical Reviews)

Plane Algebraic Curves Jan 27 2020 Plane Algebraic Curves is a classroom-tested textbook for advanced undergraduate and beginning graduate students in mathematics. The book introduces the contemporary notions of algebraic varieties, morphisms of varieties, and adeles to the classical subject of plane curves over algebraically closed fields. By restricting the rigorous development of these notions to a traditional context the book makes its subject accessible without extensive algebraic prerequisites. Once the reader's intuition for plane curves has evolved, there is a discussion of how these objects can be generalized to higher dimensional settings. These features, as well as a proof of the Riemann-Roch Theorem based on a combination of geometric and algebraic considerations, make the book a good foundation for more specialized study in algebraic geometry, commutative algebra, and algebraic function fields. Plane Algebraic Curves is suitable for readers with a variety of backgrounds and interests. The book begins with a chapter outlining prerequisites, and contains informal discussions giving an overview of its material and relating it to non-algebraic topics which would be familiar to the general reader. There is an explanation of why the algebraic genus of a hyperelliptic curve agrees with its geometric genus as a compact Riemann surface, as well as a thorough description of how the classically important elliptic curves can be described in various normal forms. The book concludes with a bibliography which students can incorporate into their further studies. Book jacket.

Probabilistic Parametric Curves for Sequence Modeling Oct 18 2021 This work proposes a probabilistic extension to Bézier curves as a basis for effectively modeling stochastic processes with a bounded index set. The proposed stochastic process model is based on Mixture Density Networks and Bézier curves with Gaussian random variables as control points. A key advantage of this model is given by the ability to generate multi-mode predictions in a single inference step, thus avoiding the need for Monte Carlo simulation.

Transition Curves of 330 Mev Bremsstrahlung Jun 13 2021

Site Index Curves for Young-growth Incense-cedar of the Westside Sierra Nevada Aug 04 2020

Topology of Algebraic Curves Sep 16 2021 The book summarizes the state and new results on the topology of trigonal curves in geometrically ruled surfaces. Emphasis is placed upon various applications of the theory to related areas, most notably singular plane curves of small degree, elliptic surfaces, and Lefschetz fibrations (both complex and real), and Hurwitz equivalence of braid monodromy factorizations. The monograph conveys recent knowledge about related objects and is of interest to researchers and graduate students in the fields of topology and of complex and real algebraic varieties.

Arithmetic on Elliptic Curves with Complex Multiplication Aug 16 2021

Space-Filling Curves Oct 06 2020 The subject of space-filling curves has fascinated mathematicians for over a century and has intrigued many generations of students of mathematics. Working in this area is like skating on the edge of reason. Unfortunately, no comprehensive treatment has ever been attempted other than the gallant effort by W. Sierpiriski in 1912. At that time, the subject was still in its infancy and the most interesting and perplexing results were still to come. Besides, Sierpiriski's paper was written in Polish and published in a journal that is not readily accessible (Sierpiriski [2]). Most of the early literature on the subject is in French, German, and Polish, providing an additional raison d'etre for a comprehensive treatment in English. While there was, understandably, some intensive research activity on this subject around the turn of the century, contributions have, nevertheless, continued up to the present and there is no end in sight, indicating that the subject is still very much alive. The recent interest in fractals has refocused interest on space filling curves, and the study of fractals has thrown some new light on this small but venerable part of mathematics. This monograph is neither a textbook nor an encyclopedic treatment of the subject nor a historical account, but it is a little of each. While it may lend structure to a seminar or pro-seminar, or be useful as a supplement in a course on topology or mathematical analysis, it is primarily intended for self-study by the aficionados of classical analysis.

Algebraic Geometry I May 25 2022 "... To sum up, this book helps to learn algebraic geometry in a short time, its concrete style is enjoyable for students and reveals the beauty of mathematics." --Acta Scientiarum Mathematicarum

Atlas of Stress-strain Curves Aug 23 2019 Contains more than 1400 curves, almost three times as many as in the 1987 edition. The curves are normalized in appearance to aid making comparisons among materials. All diagrams include metric units, and many also include U.S. customary units

Geometry of Curves Feb 07 2021 Interest in the study of geometry is currently enjoying a resurgence-understandably so, as the study of curves was once the playground of some very great mathematicians. However, many of the subject's more exciting aspects require a somewhat advanced mathematics background. For the "fun stuff" to be accessible, we need to offer students an introduction with modest prerequisites, one that stimulates their interest and focuses on problem solving. Integrating parametric, algebraic, and projective curves into a single text, Geometry of Curves offers students a unique approach that provides a mathematical structure for solving problems, not just a catalog of theorems. The author begins with the basics, then takes students on a fascinating journey from conics, higher algebraic and transcendental curves, through the properties of parametric curves, the classification of limas, envelopes, and finally to projective curves, their relationship to algebraic curves, and their application to asymptotes and boundedness. The uniqueness of this treatment lies in its integration of the different types of curves, its use of analytic methods, and its generous number of examples, exercises, and illustrations. The result is a practical text, almost entirely self-contained, that not only imparts a deeper understanding of the theory, but inspires a heightened appreciation of geometry and interest in more advanced studies.

Curves in Motion Feb 19 2022 Working with curves in quilts opens the door to a world of immense beauty, excitement, and grace. Quiltmaker Judy B. Dales teaches you her methods for creating free-form curved designs. Step-by-step instructions take you from the design stage through making the master pattern and templates, demonstrating that curves need not be complex or difficult to be effective. Special techniques showyou how to use registration and intersection marks to ensure perfectly flat pieced tops. Learn to create contrasts using the color, value, and texture of your fabrics. Includes 5 projects ranging from intermediate skill level to advanced. Photographs of over 50 finished quilts provide creative inspiration.

Conics and Cubics Dec 20 2021 Conics and Cubics offers an accessible and well illustrated introduction to algebraic curves. By classifying irreducible cubics over the real numbers and proving that their points form Abelian groups, the book gives readers easy access to the study of elliptic curves. It includes a simple proof of Bezout’s Theorem on the number of intersections of two curves. The subject area is described by means of concrete and accessible examples. The book is a text for a one-semester course.

Geometry and Interpolation of Curves and Surfaces Mar 30 2020 This text takes a practical, step-by-step approach to algebraic curves and surface interpolation motivated by the understanding of the many practical applications in engineering analysis, approximation, and curve-plotting problems. Because of its usefulness for computing, the algebraic approach is the main theme, but a brief discussion of the synthetic approach is also presented as a way of gaining additional insight before proceeding with the algebraic manipulation. Professionals, students, and researchers in applied mathematics, solid modeling, graphics, robotics, and engineering design and analysis will find this a useful reference.

Moduli of Curves Nov 30 2022 A guide to a rich and fascinating subject: algebraic curves and how they vary in families. Providing a broad but compact overview of the field, this book is accessible to readers with a modest background in algebraic geometry. It develops many techniques, including Hilbert schemes, deformation theory, stable reduction, intersection theory, and geometric invariant theory, with the focus on examples and applications arising in the study of moduli of curves. From such foundations, the book goes on to show how moduli spaces of curves are constructed, illustrates typical applications with the proofs of the Brill-Noether and Gieseker-Petri theorems via limit linear series, and surveys the most important results about their geometry ranging from irreducibility and complete subvarieties to ample divisors and Kodaira dimension.

With over 180 exercises and 70 figures, the book also provides a concise introduction to the main results and open problems about important topics which are not covered in detail.
Twisted Teichmüller Curves Oct 25 2019 These notes introduce a new class of algebraic curves on Hilbert modular surfaces. These curves are called twisted Teichmüller curves, because their construction is very reminiscent of Hirzebruch-Zagier cycles. These new objects are analyzed in detail and their main properties are described. In particular, the volume of twisted Teichmüller curves is calculated and their components are partially classified. The study of algebraic curves on Hilbert modular surfaces has been widely covered in the literature due to their arithmetic importance. Among these, twisted diagonals (Hirzebruch-Zagier cycles) are some of the most important examples.
Pencils of Cubics and Algebraic Curves in the Real Projective Plane Apr 23 2022 Pencils of Cubics and Algebraic Curves in the Real Projective Plane thoroughly examines the combinatorial configurations of n generic points in RP2. Especially how it is the data describing the mutual position of each point with respect to lines and conics passing through others. The first section in this book answers questions such as, can one count the combinatorial configurations up to the action of the symmetric group? How are they pairwise connected via almost generic configurations? These questions are addressed using rational cubics and pencils of cubics for n = 6 and 7. The book's second section deals with configurations of eight points in the convex position. Both the combinatorial configurations and combinatorial pencils are classified up to the action of the dihedral group D8. Finally, the third section contains plentiful applications and results around Hilbert's sixteenth problem. The author meticulously wrote this book based upon years of research devoted to the topic. The book is particularly useful for researchers and graduate students interested in topology, algebraic geometry and combinatorics. Features: Examines how the shape of pencils depends on the corresponding configurations of points Includes topology of real algebraic curves Contains numerous applications and results around Hilbert's sixteenth problem About the Author: Séverine Fiedler-le Touzé has published several papers on this topic and has been invited to present at many conferences. She holds a Ph.D. from University Rennes1 and was a post-doc at the Mathematical Sciences Research Institute in Berkeley, California.
Differential Geometry of Curves and Surfaces Mar 11 2021 One of the most widely used texts in its field, this volume introduces the differential geometry of curves and surfaces in both local and global aspects. The presentation departs from the traditional approach with its more extensive use of elementary linear algebra and its emphasis on basic geometrical facts rather than machinery or random details. Many examples and exercises enhance the clear, well-written exposition, along with hints and answers to some of the problems. The treatment begins with a chapter on curves, followed by explorations of regular surfaces, the geometry of the Gauss map, the intrinsic geometry of surfaces, and global differential geometry. Suitable for advanced undergraduates and graduate students of mathematics, this text's prerequisites include an undergraduate course in linear algebra and some familiarity with the calculus of several variables. For this second edition, the author has corrected, revised, and updated the entire volume.
New Contributions to R-curves and Bridging Stresses - Applications of Weight Functions Sep 04 2020 Most ceramics show an increase of the crack growth resistance during crack propagation (R-curve behaviour). Reasons for such behaviour are bridging effects between opposite crack surfaces, phase transformations around the tip of a crack, and development of micro-cracking zones.This booklet predominantly deals with the bridging behaviour and the discussion of the observed effects in terms of the fracture mechanics weight function procedure.
Singular Algebraic Curves Jan 01 2023 Singular algebraic curves have been in the focus of study in algebraic geometry from the very beginning, and till now remain a subject of an active research related to many modern developments in algebraic geometry, symplectic geometry, and tropical geometry. The monograph suggests a unified approach to the geometry of singular algebraic curves on algebraic surfaces and their families, which applies to arbitrary singularities, allows one to treat all main questions concerning the geometry of equisingular families of curves, and, finally, leads to results which can be viewed as the best possible in a reasonable sense. Various methods of the cohomology vanishing theory as well as the patchworking construction with its modifications will be of a special interest for experts in algebraic geometry and singularity theory. The introductory chapters on zero-dimensional schemes and global deformation theory can well serve as a material for special courses and seminars for graduate and post-graduate students.Geometry in general plays a leading role in modern mathematics, and algebraic geometry is the most advanced area of research in geometry. In turn, algebraic curves for more than one century have been the central subject of algebraic geometry both in fundamental theoretic questions and in applications to other fields of mathematics and mathematical physics. Particularly, the local and global study of singular algebraic curves involves a variety of methods and deep ideas from geometry, analysis, algebra, combinatorics and suggests a number of hard classical and newly appeared problems which inspire further development in this research area.
Estimated Flow-duration Curves for Selected Ungaged Sites in the Cimarron and Lower Arkansas River Basins in Kansas Dec 08 2020
Designing Fair Curves and Surfaces Nov 26 2019 The authors define fairness mathematically, demonstrate how newly developed curve and surface schemes guarantee fairness, and assist the user in identifying and removing shape aberrations in a surface model without destroying the principal shape characteristics of the model. A valuable resource for engineers working in CAD, CAM, or computer-aided engineering.
Smarandache curves of some special curves in the Galilean 3-space Jul 27 2022 In the present paper, we consider a position vector of an arbitrary curve in the three-dimensional Galilean space G3. Furthermore, we give some conditions on the curvatures of this arbitrary curve to study special curves and their Smarandache curves. Finally, in the light of this study, some related examples of these curves are provided and plotted.
Algebraic Curves over a Finite Field Jul 03 2020 This book provides an accessible and self-contained introduction to the theory of algebraic curves over a finite field, a subject that has been of fundamental importance to mathematics for many years and that has essential applications in areas such as finite geometry, number theory, error-correcting codes, and cryptology. Unlike other books, this one emphasizes the algebraic geometry rather than the function field approach to algebraic curves. The authors begin by developing the general theory of curves over any field, highlighting peculiarities occurring for positive characteristic and requiring of the reader only basic knowledge of algebra and geometry. The special properties that a curve over a finite field can have are then discussed. The geometrical theory of linear series is used to find estimates for the number of rational points on a curve, following the theory of Stöhr and Voloch. The approach of Hasse and Weil via zeta functions is explained, and then attention turns to more advanced results: a state-of-the-art introduction to maximal curves over finite fields is provided; a comprehensive account is given of the automorphism group of a curve; and some applications to coding theory and finite geometry are described. The book includes many examples and exercises. It is an indispensable resource for researchers and the ideal textbook for graduate students.
Elliptic Curves Jul 15 2021 First Edition sold over 2500 copies in the Americas; New Edition contains three new chapters and two new appendices
Phase Response Curves in Neuroscience Sep 28 2022 Inspired by response to a workshop at the 2008 OCNS meeting, this book tracks advances in the application of phase response (PR) analysis to the study of electrically excitable cells, focusing on applications of PR analysis in the computational neurosciences.
Lectures on Curves on an Algebraic Surface Oct 30 2022 These lectures, delivered by Professor Mumford at Harvard in 1963-1964, are devoted to a study of properties of families of algebraic curves, on a non-singular projective algebraic curve defined over an algebraically closed field of arbitrary characteristic. The methods and techniques of Grothendieck, which have so changed the character of algebraic geometry in recent years, are used systematically throughout. Thus the classical material is presented from a new viewpoint.
A Treatise on the Higher Plane Curves Nov 18 2021
Differential Geometry of Curves and Surfaces Jun 25 2022 This book is a posthumous publication of a classic by Prof. Shoshichi Kobayashi, who taught at U.C. Berkeley for 50 years, recently translated by Eriko Shinozaki Nagumo and Makiko Sumi Tanaka. There are five chapters: 1. Plane Curves and Space Curves; 2. Local Theory of Surfaces in Space; 3. Geometry of Surfaces; 4. Gauss–Bonnet Theorem; and 5. Minimal Surfaces. Chapter 1 discusses local and global properties of planar curves and curves in space. Chapter 2 deals with local properties of surfaces in 3-dimensional Euclidean space. Two types of curvatures — the

Gaussian curvature K and the mean curvature H —are introduced. The method of the moving frames, a standard technique in differential geometry, is introduced in the context of a surface in 3-dimensional Euclidean space. In Chapter 3, the Riemannian metric on a surface is introduced and properties determined only by the first fundamental form are discussed. The concept of a geodesic introduced in Chapter 2 is extensively discussed, and several examples of geodesics are presented with illustrations. Chapter 4 starts with a simple and elegant proof of Stokes' theorem for a domain. Then the Gauss–Bonnet theorem, the major topic of this book, is discussed at great length. The theorem is a most beautiful and deep result in differential geometry. It yields a relation between the integral of the Gaussian curvature over a given oriented closed surface S and the topology of S in terms of its Euler number $\chi(S)$. Here again, many illustrations are provided to facilitate the reader's understanding. Chapter 5, Minimal Surfaces, requires some elementary knowledge of complex analysis. However, the author retained the introductory nature of this book and focused on detailed explanations of the examples of minimal surfaces given in Chapter 2.

On Curves in a Complex Hilbert Space Sep 24 2019

Rigid Geometry of Curves and Their Jacobians Dec 28 2019 This book presents some of the most important aspects of rigid geometry, namely its applications to the study of smooth algebraic curves, of their Jacobians, and of abelian varieties - all of them defined over a complete non-archimedean valued field. The text starts with a survey of the foundation of rigid geometry, and then focuses on a detailed treatment of the applications. In the case of curves with split rational reduction there is a complete analogue to the fascinating theory of Riemann surfaces. In the case of proper smooth group varieties the uniformization and the construction of abelian varieties are treated in detail. Rigid geometry was established by John Tate and was enriched by a formal algebraic approach launched by Michel Raynaud. It has proved as a means to illustrate the geometric ideas behind the abstract methods of formal algebraic geometry as used by Mumford and Faltings. This book should be of great use to students wishing to enter this field, as well as those already working in it.

Elliptic Curves over Number Fields with Prescribed Reduction Type Aug 28 2022