

donu arapura complex algebraic geometry

Donu Arapura: Exploring the Depths of Complex Algebraic Geometry

Introduction:

Dive into the fascinating world of complex algebraic geometry with this comprehensive exploration of Donu Arapura's significant contributions to the field. This post unravels the intricacies of his work, providing a clear and accessible overview for both seasoned mathematicians and curious newcomers. We'll delve into key concepts, explain their importance, and illuminate how Arapura's research has shaped our understanding of this complex and beautiful branch of mathematics. Prepare to embark on a journey through the elegant structures and profound implications of complex algebraic geometry as seen through the lens of Donu Arapura's impactful contributions. This post will offer a detailed overview of his key research areas, their applications, and their lasting influence on the field.

Arapura's Contributions: Unveiling the Landscape of Complex Algebraic Geometry

Donu Arapura is a prominent figure in complex algebraic geometry, known for his insightful work on various fundamental aspects of the field. His research elegantly interweaves algebraic topology, Hodge theory, and representation theory, leading to profound advancements in our understanding of complex algebraic varieties. Let's delve into some of his key contributions:

1. Hodge Theory and the Decomposition Theorem:

Arapura's work significantly advanced the understanding and application of the Decomposition Theorem, a crucial result in algebraic geometry that describes the behavior of the cohomology of a variety under certain mappings. His contributions clarified the relationship between the Hodge theory of singular varieties and their resolutions of singularities, providing powerful tools for analyzing complex algebraic structures. He explored the subtle interplay between the Hodge decomposition and the topological properties of varieties, revealing deep connections that were previously less understood. This work has had significant implications for studying the geometry of singular spaces, areas previously shrouded in complexity.

2. Mixed Hodge Structures and Their Applications:

Arapura's research extensively utilizes the concept of mixed Hodge structures, a

generalization of Hodge structures applicable to singular spaces. These structures offer a powerful algebraic framework for analyzing the topology and geometry of singular varieties. His work on mixed Hodge structures has led to important advancements in understanding the cohomology of singular spaces, providing new tools for studying their topological and geometric properties. Specifically, his work on the behavior of mixed Hodge structures under various operations has proven invaluable in solving intricate problems within the field.

3. Character Varieties and Representation Theory:

Arapura's contributions extend to the fascinating area of character varieties, which are spaces parametrizing representations of the fundamental group of a complex algebraic variety. His work connects the topology of these varieties with the representation theory of fundamental groups, offering a new perspective on the relationship between algebraic topology and group theory. This intersection of seemingly disparate mathematical fields highlights the unifying power of Arapura's approach and has opened new avenues for research. The implications for understanding the geometry of varieties through the lens of their fundamental groups are particularly profound.

4. Higgs Bundles and Variations of Hodge Structure:

Arapura's research also delves into the rich interplay between Higgs bundles (stable vector bundles equipped with a Higgs field) and variations of Hodge structures. He has explored the connections between these seemingly distinct mathematical objects, providing novel insights into the geometric structures underlying both. This work touches upon the rich connections between algebraic geometry, differential geometry, and representation theory, enriching our understanding of the interconnectedness within these branches of mathematics.

5. Applications in Physics and Other Fields:

The theoretical advancements spearheaded by Arapura's research have far-reaching implications. While predominantly within the realm of pure mathematics, his work finds application in areas such as theoretical physics, where complex algebraic structures and their associated properties play crucial roles in modeling physical phenomena. His contributions provide a solid mathematical foundation for exploring advanced theoretical physics concepts.

A Textbook on Donu Arapura's Complex Algebraic Geometry

Title: Exploring Complex Algebraic Varieties Through the Lens of Arapura's Work

Outline:

Introduction: A brief biography of Donu Arapura and an overview of his key contributions to complex algebraic geometry. This section will establish the context and importance of his

research within the broader field.

Chapter 1: Foundations of Complex Algebraic Geometry: A review of essential concepts and definitions, including complex manifolds, algebraic varieties, cohomology, and Hodge theory. This chapter will provide the necessary background for understanding Arapura's work.

Chapter 2: Hodge Theory and the Decomposition Theorem: A detailed explanation of the Decomposition Theorem and its applications, with particular emphasis on Arapura's contributions and their impact on the field. This section will delve into the specifics of his research in this crucial area.

Chapter 3: Mixed Hodge Structures and Singular Spaces: An in-depth exploration of mixed Hodge structures and their role in understanding the geometry of singular varieties. This chapter will clarify the importance of mixed Hodge structures in analyzing complex algebraic varieties.

Chapter 4: Character Varieties and Representation Theory: This chapter will delve into the connection between character varieties, representation theory, and the topology of complex algebraic varieties, emphasizing Arapura's contributions.

Chapter 5: Higgs Bundles and Variations of Hodge Structure: An exploration of the connections between Higgs bundles and variations of Hodge structure, highlighting the implications of Arapura's research.

Chapter 6: Applications and Further Directions: Discussion of the applications of Arapura's work in other areas of mathematics and theoretical physics, as well as potential avenues for future research. This section will explore future directions and applications of his work.

Conclusion: A summary of the key ideas and a perspective on the long-term impact of Donu Arapura's research on the field of complex algebraic geometry. This concluding section will synthesize the information presented in the book.

Detailed Explanation of Textbook Chapters:

Each chapter outlined above would require a significant amount of space to detail fully. The following offers a brief expansion on each:

Chapter 1: This introductory chapter would lay the groundwork, defining key terms and concepts. It would cover fundamental ideas like complex manifolds, algebraic varieties, sheaves, cohomology groups, and the basic principles of Hodge theory. Examples would illustrate the concepts, gradually increasing in complexity.

Chapter 2: This chapter would focus on the Decomposition Theorem, its statement, proof, and various applications. It would thoroughly examine Arapura's contributions to understanding this theorem and its use in the context of singular varieties and their resolutions.

Chapter 3: A deep dive into mixed Hodge structures and their properties would be central. This would include defining mixed Hodge structures, explaining their significance in dealing with singular varieties, and showcasing Arapura's work on how these structures behave under different operations.

Chapter 4: This chapter would introduce character varieties, exploring their definition, properties, and significance. The connection between the topology of these varieties and representation theory would be highlighted, with examples from Arapura's work showcasing these connections.

Chapter 5: This chapter would explore the relationship between Higgs bundles and variations of Hodge structures, clarifying the mathematical objects involved and the significance of their relationship. Arapura's work in this field would be explored in detail.

Chapter 6: This would discuss potential applications of Arapura's work in other fields, such as theoretical physics, and also outline potential future research directions inspired by his contributions.

Conclusion: This final chapter would summarize the key findings and emphasize the lasting impact of Arapura's research on complex algebraic geometry. It would emphasize the elegance and power of his methods and highlight the ongoing influence of his work.

FAQs:

1. What is the significance of Donu Arapura's work in complex algebraic geometry? His work significantly advanced our understanding of Hodge theory, mixed Hodge structures, and the connections between algebraic topology and representation theory.
1. What are some key concepts Arapura's research focuses on? Hodge theory, mixed Hodge structures, the Decomposition Theorem, character varieties, and Higgs bundles.
1. How does Arapura's work relate to singular spaces? His research provides powerful tools for analyzing the geometry and topology of singular algebraic varieties using mixed Hodge structures.
1. What are the applications of Arapura's research outside of pure mathematics? Potential applications exist in theoretical physics, where complex algebraic structures are relevant to modeling physical phenomena.
1. What is the Decomposition Theorem and why is it important? It describes the behavior of cohomology under certain maps, providing crucial insights into the structure of algebraic varieties.
1. What are character varieties and how are they relevant to Arapura's work? Character

varieties parametrize representations of fundamental groups, and Arapura's research explores their connections with the topology of algebraic varieties.

1. What are Higgs bundles, and what is their significance in Arapura's research? Higgs bundles are stable vector bundles with a Higgs field, and their relationship with variations of Hodge structures is a key area of Arapura's work.
1. How accessible is Arapura's research to non-specialists? While the core concepts are advanced, the overview presented here and in well-written texts can provide a general understanding of the significance of his contributions.
1. Where can I find more information on Donu Arapura's publications? Mathematical databases like MathSciNet and his university website are excellent resources for finding his published papers.

Related Articles:

1. The Decomposition Theorem in Algebraic Geometry: A detailed explanation of the theorem and its proof.
2. Introduction to Hodge Theory: A beginner-friendly guide to Hodge theory concepts.
3. Mixed Hodge Structures: A Comprehensive Overview: A thorough exploration of mixed Hodge structures and their applications.
4. Character Varieties and Their Topological Invariants: A discussion of character varieties and their topological properties.
5. Higgs Bundles and their Moduli Spaces: An exploration of Higgs bundles and their moduli spaces.
6. Singular Algebraic Varieties and Resolution of Singularities: A detailed discussion on singular spaces and resolution techniques.
7. Applications of Algebraic Geometry in Physics: A survey of the use of algebraic geometry in theoretical physics.
8. Representation Theory and its Connections to Geometry: An exploration of the relationship between representation theory and geometry.

9. Advanced Topics in Complex Algebraic Geometry: A guide to more advanced concepts in the field.

donu arapura complex algebraic geometry: Algebraic Geometry over the Complex Numbers Donu Arapura, 2012-02-15 This is a relatively fast paced graduate level introduction to complex algebraic geometry, from the basics to the frontier of the subject. It covers sheaf theory, cohomology, some Hodge theory, as well as some of the more algebraic aspects of algebraic geometry. The author frequently refers the reader if the treatment of a certain topic is readily available elsewhere but goes into considerable detail on topics for which his treatment puts a twist or a more transparent viewpoint. His cases of exploration and are chosen very carefully and deliberately. The textbook achieves its purpose of taking new students of complex algebraic geometry through this a deep yet broad introduction to a vast subject, eventually bringing them to the forefront of the topic via a non-intimidating style.

donu arapura complex algebraic geometry: Algebraic Geometry Robin Hartshorne, 2013-06-29 An introduction to abstract algebraic geometry, with the only prerequisites being results from commutative algebra, which are stated as needed, and some elementary topology. More than 400 exercises distributed throughout the book offer specific examples as well as more specialised topics not treated in the main text, while three appendices present brief accounts of some areas of current research. This book can thus be used as textbook for an introductory course in algebraic geometry following a basic graduate course in algebra. Robin Hartshorne studied algebraic geometry with Oscar Zariski and David Mumford at Harvard, and with J.-P. Serre and A. Grothendieck in Paris. He is the author of Residues and Duality, Foundations of Projective Geometry, Ample Subvarieties of Algebraic Varieties, and numerous research titles.

donu arapura complex algebraic geometry: Current Topics in Complex Algebraic Geometry Charles Herbert Clemens, Janos Kollár, 1995 The 1992/93 academic year at the Mathematical Sciences Research Institute was devoted to complex algebraic geometry. This volume collects survey articles that arose from this event, which took place at a time when algebraic geometry was undergoing a major change. The editors of the volume, Herbert Clemens and János Kollár, chaired the organizing committee. This book gives a good idea of the intellectual content of the special year and of the workshops. Its articles represent very well the change of direction and branching out witnessed by algebraic geometry in the last few years.

donu arapura complex algebraic geometry: Recent Advances in Hodge Theory Matt Kerr, Gregory Pearlstein, 2016-02-04 Combines cutting-edge research and expository articles in Hodge theory. An essential reference for graduate students and researchers.

donu arapura complex algebraic geometry: Geometry of Lie Groups B. Rosenfeld, Bill Wiebe, 1997-02-28 This book is the result of many years of research in Non-Euclidean Geometries and Geometry of Lie groups, as well as teaching at Moscow State University (1947- 1949), Azerbaijan State University (Baku) (1950-1955), Kolomna Pedagogical College (1955-1970), Moscow Pedagogical University (1971-1990), and Pennsylvania State University (1990-1995). My first books on Non-Euclidean Geometries and Geometry of Lie groups were written in Russian and published in Moscow: Non-Euclidean Geometries (1955) [Ro1] , Multidimensional Spaces (1966) [Ro2] , and Non-Euclidean Spaces (1969) [Ro3]. In [Ro1] I considered non-Euclidean geometries in the broad sense, as geometry of simple Lie groups, since classical non-Euclidean geometries, hyperbolic and elliptic, are geometries of simple Lie groups of classes B_n and D , and geometries of complex n and quaternionic Hermitian elliptic and hyperbolic spaces are geometries of simple Lie groups of classes A_n and e_n . [Ro1] contains an exposition of the geometry of classical real non-Euclidean spaces and their interpretations as hyperspheres with identified antipodal points in Euclidean or

pseudo-Euclidean spaces, and in projective and conformal spaces. Numerous interpretations of various spaces different from our usual space allow us, like stereoscopic vision, to see many traits of these spaces absent in the usual space.

donu arapura complex algebraic geometry: Complex Analytic Geometry Gerd Fischer, 2006-11-14

donu arapura complex algebraic geometry: The Geometry of Algebraic Cycles Reza Akhtar, Patrick Brosnan, Roy Joshua, 2010 The subject of algebraic cycles has its roots in the study of divisors, extending as far back as the nineteenth century. Since then, and in particular in recent years, algebraic cycles have made a significant impact on many fields of mathematics, among them number theory, algebraic geometry, and mathematical physics. The present volume contains articles on all of the above aspects of algebraic cycles. It also contains a mixture of both research papers and expository articles, so that it would be of interest to both experts and beginners in the field.

donu arapura complex algebraic geometry: Fundamental Groups of Compact Kahler Manifolds Jaume Amorós, 1996 This book is an exposition of what is currently known about the fundamental groups of compact Kähler manifolds. This class of groups contains all finite groups and is strictly smaller than the class of all finitely presentable groups. For the first time ever, this book collects together all the results obtained in the last few years which aim to characterize those infinite groups which can arise as fundamental groups of compact Kähler manifolds. Most of these results are negative ones, saying which groups do not arise. The methods and techniques used form an attractive mix of topology, differential and algebraic geometry, and complex analysis. The book would be useful to researchers and graduate students interested in any of these areas, and it could be used as a textbook for an advanced graduate course. One of its outstanding features is a large number of concrete examples. The book contains a number of new results and examples which have not appeared elsewhere, as well as discussions of some important open questions in the field.

donu arapura complex algebraic geometry: Hodge Theory, Complex Geometry, and Representation Theory Robert S. Doran, Greg Friedman, Scott Nollet, 2014 Contains carefully written expository and research articles. Expository papers include discussions of Noether-Lefschetz theory, algebraicity of Hodge loci, and the representation theory of $SL_2(\mathbb{R})$. Research articles concern the Hodge conjecture, Harish-Chandra modules, mirror symmetry, Hodge representations of $\mathbb{Q}$ -algebraic groups, and compactifications, distributions, and quotients of period domains.

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donu arapura complex algebraic geometry: Differential Algebraic Topology Matthias Kreck, 2010 This book presents a geometric introduction to the homology of topological spaces and the cohomology of smooth manifolds. The author introduces a new class of stratified spaces, so-called stratifolds. He derives basic concepts from differential topology such as Sard's theorem, partitions of unity and transversality. Based on this, homology groups are constructed in the framework of stratifolds and the homology axioms are proved. This implies that for nice spaces these homology groups agree with ordinary singular homology. Besides the standard computations of homology groups using the axioms, straightforward constructions of important homology classes are given. The author also defines stratifold cohomology groups following an idea of Quillen. Again, certain important cohomology classes occur very naturally in this description, for example, the characteristic classes which are constructed in the book and applied later on. One of the most fundamental results, Poincaré duality, is almost a triviality in this approach. Some fundamental invariants, such as the Euler characteristic and the signature, are derived from (co)homology groups. These invariants play a significant role in some of the most spectacular results in differential topology. In particular, the author proves a special case of Hirzebruch's signature theorem and presents as a highlight Milnor's exotic 7-spheres. This book is based on courses the author taught in

Mainz and Heidelberg. Readers should be familiar with the basic notions of point-set topology and differential topology. The book can be used for a combined introduction to differential and algebraic topology, as well as for a quick presentation of (co)homology in a course about differential geometry.

donu arapura complex algebraic geometry: Singular Points of Plane Curves C. T. C. Wall, 2004-11-15 Publisher Description

donu arapura complex algebraic geometry: Algebraic Geometry for Scientists and Engineers Shreeram Shankar Abhyankar, 1990 Based on lectures presented in courses on algebraic geometry taught by the author at Purdue University, this book covers various topics in the theory of algebraic curves and surfaces, such as rational and polynomial parametrization, functions and differentials on a curve, branches and valuations, and resolution of singularities.

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donu arapura complex algebraic geometry: Algebraic Curves and Riemann Surfaces Rick Miranda, 1995 In this book, Miranda takes the approach that algebraic curves are best encountered for the first time over the complex numbers, where the reader's classical intuition about surfaces, integration, and other concepts can be brought into play. Therefore, many examples of algebraic curves are presented in the first chapters. In this way, the book begins as a primer on Riemann surfaces, with complex charts and meromorphic functions taking centre stage. But the main examples come from projective curves, and slowly but surely the text moves toward the algebraic category. Proofs of the Riemann-Roch and Serre Duality Theorems are presented in an algebraic manner, via an adaptation of the adelic proof, expressed completely in terms of solving a Mittag-Leffler problem. Sheaves and cohomology are introduced as a unifying device in the later chapters, so that their utility and naturalness are immediately obvious. Requiring a background of one term of complex variable theory and a year of abstract algebra, this is an excellent graduate textbook for a second-term course in complex variables or a year-long course in algebraic geometry.

donu arapura complex algebraic geometry: Higher Algebraic K-Theory: An Overview Emilio Lluis-Puebla, Jean-Louis Loday, Henri Gillet, Christophe Soule, Victor Snaith, 2006-11-14 This book is a general introduction to Higher Algebraic K-groups of rings and algebraic varieties, which were first defined by Quillen at the beginning of the 70's. These K-groups happen to be useful in many different fields, including topology, algebraic geometry, algebra and number theory. The goal of this volume is to provide graduate students, teachers and researchers with basic definitions, concepts and results, and to give a sampling of current directions of research. Written by five specialists of different parts of the subject, each set of lectures reflects the particular perspective of its author. As such, this volume can serve as a primer (if not as a technical basic textbook) for mathematicians from many different fields of interest.

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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.

donu arapura complex algebraic geometry: Hodge Theory and Complex Algebraic Geometry Claire Voisin, 2007-12-20 This is a modern introduction to Kaehlerian geometry and Hodge structure. Coverage begins with variables, complex manifolds, holomorphic vector bundles, sheaves and cohomology theory (with the latter being treated in a more theoretical way than is usual in geometry). The book culminates with the Hodge decomposition theorem. In between, the author proves the Kaehler identities, which leads to the hard Lefschetz theorem and the Hodge index theorem. The second part of the book investigates the meaning of these results in several directions.

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donu arapura complex algebraic geometry: Complex Non-Kähler Geometry Sławomir Dinew, Sebastien Picard, Andrei Teleman, Alberto Verjovsky, 2019-11-05 Collecting together the lecture notes of the CIME Summer School held in Cetraro in July 2018, the aim of the book is to introduce a vast range of techniques which are useful in the investigation of complex manifolds. The school consisted of four courses, focusing on both the construction of non-Kähler manifolds and the understanding of a possible classification of complex non-Kähler manifolds. In particular, the courses by Alberto Verjovsky and Andrei Teleman introduced tools in the theory of foliations and analytic techniques for the classification of compact complex surfaces and compact Kähler manifolds, respectively. The courses by Sebastien Picard and Sławomir Dinew focused on analytic techniques in Hermitian geometry, more precisely, on special Hermitian metrics and geometric flows, and on pluripotential theory in complex non-Kähler geometry.

donu arapura complex algebraic geometry: Lectures on the h-Cobordism Theorem John Milnor, 2025-03-25 Important lectures on differential topology by acclaimed mathematician John Milnor These are notes from lectures that John Milnor delivered as a seminar on differential topology in 1963 at Princeton University. These lectures give a new proof of the h-cobordism theorem that is different from the original proof presented by Stephen Smale. Milnor's goal was to provide a fully rigorous proof in terms of Morse functions. This book remains an important resource in the application of Morse theory.

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undergraduate mathematics students or first year graduate students, and would make an ideal capstone course in mathematics.

donu arapura complex algebraic geometry: Algebraic Geometry Over the Complex Numbers, 2012-02-16

donu arapura complex algebraic geometry: Theory of Complex Functions Reinhold Remmert, 2012-12-06 A lively and vivid look at the material from function theory, including the residue calculus, supported by examples and practice exercises throughout. There is also ample discussion of the historical evolution of the theory, biographical sketches of important contributors, and citations - in the original language with their English translation - from their classical works. Yet the book is far from being a mere history of function theory, and even experts will find a few new or long forgotten gems here. Destined to accompany students making their way into this classical area of mathematics, the book offers quick access to the essential results for exam preparation. Teachers and interested mathematicians in finance, industry and science will profit from reading this again and again, and will refer back to it with pleasure.

donu arapura complex algebraic geometry: *Mixed Hodge Structures* Chris A.M. Peters, Joseph H. M. Steenbrink, 2008-02-27 This is comprehensive basic monograph on mixed Hodge structures. Building up from basic Hodge theory the book explains Deligne's mixed Hodge theory in a detailed fashion. Then both Hain's and Morgan's approaches to mixed Hodge theory related to homotopy theory are sketched. Next comes the relative theory, and then the all encompassing theory of mixed Hodge modules. The book is interlaced with chapters containing applications. Three large appendices complete the book.

donu arapura complex algebraic geometry: Algebraic Geometry I David Mumford, 1976 From the reviews: Although several textbooks on modern algebraic geometry have been published in the meantime, Mumford's Volume I is, together with its predecessor the red book of varieties and schemes, now as before one of the most excellent and profound primers of modern algebraic geometry. Both books are just true classics! Zentralblatt

donu arapura complex algebraic geometry: Using Algebraic Geometry David A. Cox, John Little, DONAL OSHEA, 2013-04-17 An illustration of the many uses of algebraic geometry, highlighting the more recent applications of Groebner bases and resultants. Along the way, the authors provide an introduction to some algebraic objects and techniques more advanced than typically encountered in a first course. The book is accessible to non-specialists and to readers with a diverse range of backgrounds, assuming readers know the material covered in standard undergraduate courses, including abstract algebra. But because the text is intended for beginning graduate students, it does not require graduate algebra, and in particular, does not assume that the reader is familiar with modules.

donu arapura complex algebraic geometry: *Lectures on Vanishing Theorems* Esnault, Vieweg, 1992-12-01 Introduction M. Kodaira's vanishing theorem, saying that the inverse of an ample invertible sheaf on a projective complex manifold X has no cohomology below the dimension of X and its generalization, due to Y. Akizuki and S. Nakano, have been proven originally by methods from differential geometry ([39] and [1]). Even if, due to J.P. Serre's GAGA-theorems [56] and base change for field extensions the algebraic analogue was obtained for projective manifolds over a field k of characteristic $p = 0$, for a long time no algebraic proof was known and no generalization to $p > 0$, except for certain lower dimensional manifolds. Worse, counterexamples due to M. Raynaud [52] showed that in characteristic $p > 0$ some additional assumptions were needed. This was the state of the art until P. Deligne and I. Illusie [12] proved the degeneration of the Hodge to de Rham spectral sequence for projective manifolds X defined over a field k of characteristic $p > 0$ and liftable to the second Witt vectors $W_2(k)$. Standard degeneration arguments allow to deduce the degeneration of the Hodge to de Rham spectral sequence in characteristic zero, as well, a result which again could only be obtained by analytic and differential geometric methods beforehand. As a corollary of their methods M. Raynaud (loc. cit.) gave an easy proof of Kodaira vanishing in all characteristics, provided that X lifts to $W_2(k)$.

donu arapura complex algebraic geometry: Vector Bundles on Complex Projective Spaces Christian Okonek, Heinz Spindler, Michael Schneider, 2013-11-11 These lecture notes are intended as an introduction to the methods of classification of holomorphic vector bundles over projective algebraic manifolds X . To be as concrete as possible we have mostly restricted ourselves to the case $X = \mathbb{P}^n$. According to Serre (GAGA) the classification of holomorphic vector bundles is equivalent to the classification of algebraic vector bundles. Here we have used almost exclusively the language of analytic geometry. The book is intended for students who have a basic knowledge of analytic and (or) algebraic geometry. Some fundamental results from these fields are summarized at the beginning. One of the authors gave a survey in the Seminaire Bourbaki 1978 on the current state of the classification of holomorphic vector bundles over $\mathbb{P}^n$. This lecture then served as the basis for a course of lectures in Gottingen in the Winter Semester 78/79. The present work is an extended and up-dated exposition of that course. Because of the introductory nature of this book we have had to leave out some difficult topics such as the restriction theorem of Barth. As compensation we have appended to each section a paragraph in which historical remarks are made, further results indicated and unsolved problems presented. The book is divided into two chapters. Each chapter is subdivided into several sections which in turn are made up of a number of paragraphs. Each section is preceded by a short description of its contents.

donu arapura complex algebraic geometry: Algebraic Geometry Thomas A. Garrity, 2013-02-01 Algebraic Geometry has been at the center of much of mathematics for hundreds of years. It is not an easy field to break into, despite its humble beginnings in the study of circles, ellipses, hyperbolas, and parabolas. This text consists of a series of ex

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spaces and anomaly functionals, central extensions of loop groups, Kähler geometry of the space of knots, and Cheeger--Chern--Simons secondary characteristics classes. It also covers the Dirac monopole and Dirac's quantization of the electrical charge.

donu arapura complex algebraic geometry: Differential Geometry of Complex Vector Bundles Shoshichi Kobayashi, 2014-07-14 Holomorphic vector bundles have become objects of interest not only to algebraic and differential geometers and complex analysts but also to low dimensional topologists and mathematical physicists working on gauge theory. This book, which grew out of the author's lectures and seminars in Berkeley and Japan, is written for researchers and graduate students in these various fields of mathematics. Originally published in 1987. The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton University Press. These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

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