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Chapter 1 : CiteSeerX â€” Citation Query Ample subvarieties of Algebraic Varieties

Ample Subvarieties of Algebraic Varieties Dimension Divisor Grothendieck topology algebra algebraic geometry algebraic varieties. Bibliographic information.

The Grassmannian variety comes with a natural vector bundle or locally free sheaf in other terminology called the tautological bundle , which is important in the study of characteristic classes such as Chern classes. Non-affine and non-projective example[edit] An algebraic variety can be neither affine nor projective. It is an algebraic variety since it is a product of varieties. It is not affine since P1 is a closed subvariety of X as the zero locus of p , but an affine variety cannot contain a projective variety of positive dimension as a closed subvariety. It is not projective either, since there is a nonconstant regular function on X; namely, p. Basic results[edit] An affine algebraic set V is a variety if and only if I V is a prime ideal ; equivalently, V is a variety if and only if its coordinate ring is an integral domain. See Dimension of an algebraic variety for details. Isomorphism of algebraic varieties[edit] See also: Discussion and generalizations[edit] This section includes a list of references , related reading or external links , but its sources remain unclear because it lacks inline citations. Please help to improve this section by introducing more precise citations. March Learn how and when to remove this template message The basic definitions and facts above enable one to do classical algebraic geometry. To be able to do more â€” for example, to deal with varieties over fields that are not algebraically closed â€” some foundational changes are required. The modern notion of a variety is considerably more abstract than the one above, though equivalent in the case of varieties over algebraically closed fields. An abstract algebraic variety is a particular kind of scheme ; the generalization to schemes on the geometric side enables an extension of the correspondence described above to a wider class of rings. A scheme is a locally ringed space such that every point has a neighbourhood that, as a locally ringed space, is isomorphic to a spectrum of a ring. Basically, a variety over k is a scheme whose structure sheaf is a sheaf of k-algebras with the property that the rings R that occur above are all integral domains and are all finitely generated k-algebras, that is to say, they are quotients of polynomial algebras by prime ideals. This definition works over any field k. It allows you to glue affine varieties along common open sets without worrying whether the resulting object can be put into some projective space. This also leads to difficulties since one can introduce somewhat pathological objects, e. Such objects are usually not considered varieties, and are eliminated by requiring the schemes underlying a variety to be separated. Strictly speaking, there is also a third condition, namely, that one needs only finitely many affine patches in the definition above. Some modern researchers also remove the restriction on a variety having integral domain affine charts, and when speaking of a variety only require that the affine charts have trivial nilradical. A complete variety is a variety such that any map from an open subset of a nonsingular curve into it can be extended uniquely to the whole curve. Every projective variety is complete, but not vice versa. They remain typical objects to start studying in algebraic geometry, even if more general objects are also used in an auxiliary way. A more significant modification is to allow nilpotents in the sheaf of rings, that is, rings which are not reduced. Allowing nilpotent elements in rings is related to keeping track of "multiplicities" in algebraic geometry. Geometrically, this says that fibers of good mappings may have nontrivial "infinitesimal" structure.

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Chapter 2 : Algebra and Algebraic Geometry Seminar Spring - Math

Ample Subvarieties of Algebraic Varieties by Robin Hartshorne. Publisher: Springer ISBN/ASIN: Number of pages: Description: These notes are an enlarged version of a three-month course of lectures I gave at the Tata Institute of Fundamental Research.

Show Context Citation Context This structure was previously known in characteristic 0. A different proof was given by Bogomolov [4]. This proof is in fact valid in arbitrary characteristic. We deal with the distributions of holomorphic curves and integral points off divisors. We will simultaneouly prove an optimal dimension estimate from above of a subvariety W off a divisor D which contains a Zariski dense entire holomorphic curve, or a Zariski dense D-integral point set, provided tha We will simultaneouly prove an optimal dimension estimate from above of a subvariety W off a divisor D which contains a Zariski dense entire holomorphic curve, or a Zariski dense D-integral point set, provided that in the latter case everything is defined over a number field. Then, if the number of components of D is large, the estimate leads to the constancy of such a holomorphic curve or the finiteness of such an integral point set. W was also proved, and by their examples the dimension estimate is best possible in general see Remark 4. In the proof of Theorem 1. For the proof 90 of Theorem 1. We also prove a structu We also prove a structure theorem for the locus which contains all possible image of non-constant entire holomorphic curves in a semi-Abelian variety omitting a divisor. Recent techniques in hyperbolicity problems by Yum-tong Siu - In Several complex variables , " We explain the motivations and main ideas regarding the new techniques in hyperbolicity problems recently introduced by the author and Sai-Kee Yeung and by Michael McQuillan. Streamlined proofs and alternative approaches are given for previously known results. Wesaythatacomplexmanifoldishyperbolic if there is no nonconstant holomorphic map from C to it. This paper discusses the new techniques in hyperbolicity problems introduced in recent years in a series of joint papers which I wrote with Sai-Kee Yeung [Siu and Yeung b; a;] and in a series of papers by Michael McQuillan [McQuillan ;]. The goal is to explain the motivations and the main ideas of these techniques. In the process we examine known results using new approaches, providing streamlined proofs for them. The paper consists of three parts: The Introduction provides the necessary background, states the main problems, and discusses the motivations and the main ideas of the recent new techniques. Chapter 1 presents a proof of the following theorem, using techniques from diophantine Hyperbolic algebraic varieties and holomorphic differential equations by Jean-pierre Demailly " The goal of these notes is to explain recent results in the theory of complex varieties, mainly projective algebraic ones, through a few geometric questions pertaining to hyperbolicity in the sense of Kobayashi. A complex space X is said to be hyperbolic if an A complex space X is said to be hyperbolic if analytic disks f: If X is not hyperbolic, a basic question is to analyze entire holomorphic curves f:

Chapter 3 : Algebraic variety - Wikipedia

Ample subvarieties of algebraic varieties Robin Hartshorne. Publisher: Springer(Berlin [u.a.]), ; Access Full Book top Access to full text.

Derived Azumaya Algebras and Twisted K-theory Topological K-theory of dg-categories is a localizing invariant of dg-categories over taking values in the -modules. In this talk I describe a relative version of this construction; namely for a quasi-compact, quasi-separated -scheme I construct a functor valued in the -category of sheaves of spectra on , the complex points of. For inputs of the form where is an Azumaya algebra over , I characterize the values of this functor in terms of the twisted topological K-theory of. Roman Fedorov A conjecture of Grothendieck and Serre on principal bundles in mixed characteristic Let G be a reductive group scheme over a regular local ring R. An old conjecture of Grothendieck and Serre predicts that such a principal bundle is trivial, if it is trivial over the fraction field of R. The conjecture has recently been proved in the "geometric" case, that is, when R contains a field. In the remaining case, the difficulty comes from the fact, that the situation is more rigid, so that a certain general position argument does not go through. I will discuss this difficulty and a way to circumvent it to obtain some partial results. Juliette Bruce Asymptotic Syzygies in the Semi-Ample Setting In recent years numerous conjectures have been made describing the asymptotic Betti numbers of a projective variety as the embedding line bundle becomes more ample. I will discuss recent work attempting to generalize these conjectures to the case when the embedding line bundle becomes more semi-ample. Recall a line bundle is semi-ample if a sufficiently large multiple is base point free. In particular, I will discuss how the monomial methods of Ein, Erman, and Lazarsfeld used to prove non-vanishing results on projective space can be extended to prove non-vanishing results for products of projective space. Applying his construction to the derived category of sheaves of a complex projective variety provides a definition of higher genus B-model Gromov-Witten invariants, independent of the BCOV formalism. This has several advantages. Due to the categorical invariance of these invariants, categorical mirror symmetry automatically implies classical mirror symmetry to all genera. Also, the construction can be applied to other categories like categories of matrix factorization, giving a direct definition of FJRW invariants, for example. The result agrees with the predictions of mirror symmetry, matching classical calculations of Dijkgraaf. It is the first non-trivial computation of a categorical Gromov-Witten invariant. Aron Heleodoro Normally ordered tensor product of Tate objects and decomposition of higher adeles In this talk I will introduce the different tensor products that exist on Tate objects over vector spaces or more generally coherent sheaves on a given scheme. As an application, I will explain how these can be used to describe higher adeles on an n-dimensional smooth scheme. Both Tate objects and higher adeles would be introduced in the talk. This is based on joint work with Braunling, Groechenig and Wolfson. In particular, there is a well-defined notion of restricting a D-module to a formal neighborhood of a point, and these restrictions are completely described by two vector spaces, called vanishing cycles and nearby cycles, and some maps between them. We give an analogous notion of "restriction to a formal disk" for difference equations that satisfies several desirable properties: Secondly, it gives rise to a local Mellin transform, which relates vanishing cycles of a difference module to nearby cycles of its Mellin transform. Since the Mellin transform of a difference module is a D-module, the Mellin transform brings us back to the familiar world of D-modules. Eva Elduque On the signed Euler characteristic property for subvarieties of Abelian varieties Franecki and Kapranov proved that the Euler characteristic of a perverse sheaf on a semi-abelian variety is non-negative. This result has several purely topological consequences regarding the sign of the topological and intersection homology Euler characteristic of a subvariety of an abelian variety, and it is natural to attempt to justify them by more elementary methods. Joint work with Christian Geske and Laurentiu Maxim. Harrison Chen Equivariant localization for periodic cyclic homology and derived loop spaces There is a close relationship between derived loop spaces, a geometric object, and periodic cyclic homology, a categorical invariant. In this talk we will discuss this relationship and how it leads to an equivariant localization result, which has an intuitive interpretation using the language of derived loop spaces. We discuss ongoing

generalizations and potential applications in computing the periodic cyclic homology of categories of equivariant coherent sheaves on algebraic varieties. Phil Tosteson Stability in the homology of Deligne-Mumford compactifications The space is a compactification of the moduli space algebraic curves with marked points, obtained by allowing smooth curves to degenerate to nodal ones. We will talk about how the asymptotic behavior of its homology, , for can be studied using the representation theory of the category of finite sets and surjections. Wei Ho Noncommutative Galois closures and moduli problems In this talk, we will discuss the notion of a Galois closure for a possibly noncommutative algebra. We will explain how this problem is related to certain moduli problems involving genus one curves and torsors for Jacobians of higher genus curves. This is joint work with Matt Satriano. Alena Pirutka Irrationality problems Let X be a projective algebraic variety, the set of solutions of a system of homogeneous polynomial equations. Over the field of complex numbers, these notions coincide in dimensions one and two, but diverge in higher dimensions. In the last years, many new classes of non stably rational varieties were found, using a specialization technique, introduced by C. This method also allowed to prove that the rationality is not a deformation invariant in smooth and projective families of complex varieties: In my talk I will describe classical examples, as well as the recent progress around these rationality questions. In contrast, we show that if a complex algebraic variety has no weight zero 1-cohomology classes, then the fundamental group is strongly restricted: Same for links and Milnor fibers. Alexander Yom Din Drinfeld-Gaitsgory functor and contragradient duality for g,K -modules Drinfeld suggested the definition of a certain endo-functor, called the pseudo-identity functor or the Drinfeld-Gaitsgory functor , on the category of D-modules on an algebraic stack. We extend this definition to an arbitrary DG category, and show that if certain finiteness conditions are satisfied, this functor is the inverse of the Serre functor. We show that the pseudo-identity functor for g,K -modules is isomorphic to the composition of cohomological and contragredient dualities, which is parallel to an analogous assertion for p-adic groups. In this talk I will try to discuss some of these results and around them. This is joint work with Dennis Gaitsgory. John Lesieutre Some higher-dimensional cases of the Kawaguchi-Silverman conjecture Given a dominant rational self-map f: A conjecture of Kawaguchi and Silverman predicts that if P has Zariski-dense orbit, then these two quantities coincide. This is joint work with Matthew Satriano.

Chapter 4 : Positivity In Algebraic Geometry I Book â€“ PDF Download

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Chapter 5 : CiteSeerX â€” Citation Query On holomorphic curves in algebraic varieties with ample irregular

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Chapter 8 : Basic Algebraic Geometry 1 Book â€“ PDF Download

Ample subvarieties of Algebraic Varieties () by R Hartshorne One of the themes in algebraic geometry is the study of the relation between the "topology.

Chapter 9 : Peternell : Compact subvarieties with ample normal bundles, algebraicity, and cones of cycles

Algebraic varieties are the central objects of study in algebraic geometry. Classically, an algebraic variety is defined as the set of solutions of a system of polynomial equations over the real or complex numbers.