

ON THE ADJUNCTION FORMULA FOR 3-FOLDS IN CHARACTERISTIC $p > 5$

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ABSTRACT. In this article we prove a relative Kawamata-Viehweg vanishing-type theorem for PLT 3-folds in characteristic $p > 5$. We use this to prove the normality of minimal log canonical centers and the adjunction formula for codimension 2 subvarieties on $\mathbb{Q}$ -factorial 3-folds in characteristic $p > 5$.

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1. INTRODUCTION

Let (X, Δ) be a log canonical pair and W a minimal log canonical center, then (under mild technical assumptions) by Kawamata's celebrated subadjunction theorem, it is known that W is normal and we can write $(K_X + \Delta)|_W = K_W + \Delta_W$ where (W, Δ_W) is Kawamata log terminal [Kaw98] (see also [Kaw97b] and the references therein). The proof of this result is based on the Kawamata-Viehweg vanishing theorem and Hodge theory. These results are known to fail in characteristic $p > 0$ and therefore one may expect that Kawamata's subadjunction also fails in this context. It should however be noted that related results have been obtained in the closely related context of F -singularities (see for example [Sch09], [HX15] and [Das15]) and that the minimal model program has been established for 3-folds in characteristic $p > 5$ (see [HX15] and [Bir13]). In particular [HX15] exploits the fact that PLT singularities in dimension 3 and characteristic $p > 5$ are closely related to the analogous notion of Purely F -regular singularities. In this paper, using the results from [HX15] and [Bir13], we show that in dimension 3 and characteristic $p > 5$ a relative version of the Kawamata-Viehweg vanishing theorem

Some Special Properties Of The Adjunction Theory For 3 Folds In P^5

Karin Nielsen-Saines



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Some Special Properties of the Adjunction Theory for 3-Folds in $\mathbb{P}^5$ Mauro Beltrametti, Michael Schneider, Andrew John Sommese, 1995 This work studies the adjunction theory of smooth 3 folds in $\mathbb{P}^5$ Because of the many special restrictions on such 3 folds the structure of the adjunction theoretic reductions are especially simple e g the 3 fold equals its first reduction the second reduction is smooth except possibly for a few explicit low degrees and the formulae relating the projective invariants of the given 3 fold with the invariants of its second reduction are very explicit Tables summarizing the classification of such 3 folds up to degree 12 are included Many of the general results are shown to hold for smooth projective n folds embedded in $\mathbb{P}^N$ with $N \geq n+1$ **Vector Bundles in Algebraic Geometry** N. J.

Hitchin, 1995-03-16 This book is a collection of survey articles by the main speakers at the 1993 Durham symposium on vector bundles in algebraic geometry **Axiomatic Stable Homotopy Theory** Mark Hovey, John Harold Palmieri, Neil P. Strickland, 1997 We define and investigate a class of categories with formal properties similar to those of the homotopy category of spectra This class includes suitable versions of the derived category of modules over a commutative ring or of comodules over a commutative Hopf algebra and is closed under Bousfield localization We study various notions of smallness questions about representability of co homology functors and various kinds of localization We prove theorems analogous to those of Hopkins and Smith about detection of nilpotence and classification of thick subcategories We define the class of Noetherian stable homotopy categories and investigate their special properties Finally we prove that a number of categories occurring in nature including those mentioned above satisfy our axioms *Forthcoming Books* Rose Arny, 1996-06

Complex Projective Geometry G. Ellingsrud, 1992-07-30 A volume of papers describing new methods in algebraic geometry **Some Special Properties of the Adjunction Theory for 3-folds in $\mathbb{P}^5$** Mauro Beltrametti, Michael Schneider, Andrew John Sommese, 1995 **Mathematical Reviews** , 2002 **American Book Publishing Record** , 1996 **The Cumulative Book Index** , 1996 A world list of books in the English language Geometry of Complex Projective Varieties A. Lanteri, M. Palleschi, Daniele Carlo Struppa, 1993

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