Contents

PART 1

Algebraic Varieties; General Results

•	
On varieties of minimal degree	_
DAVID EISENBUD AND JOE HARRIS	3
On the topology of algebraic varieties	
WILLIAM FULTON	15
Curves	
Fay's trisecant formula and a characterization of Jacobian varieties	
ENRICO ARBARELLO	49
Deformations and smoothing of complete linear systems on reducible curves	
Mei-Chu Chang and Ziv Ran	63
Complete subvarieties of the moduli space of smooth curves	
STEVEN DIAZ	77
The irreducibility of the Hilbert scheme of smooth space curves	
LAWRENCE EIN	83
On theta functions for Jacobi varieties	
R. C. GUNNING	89
Curves and their moduli	
JOE HARRIS	99
On the classification of algebraic space curves, II	
ROBIN HARTSHORNE	145
The rationality of certain spaces associated to trigonal curves	
N. I. SHEPHERD-BARRON	165
Surfaces	
Canonical rings and "special" surfaces of general type	
F. CATANESE	175
An introduction to the geography of surfaces of general type	

Threefolds

195

Contributions to Riemann-Roch on projective 3-folds with only canonical	
singularities and applications	
A R FLETCHER	221

A. R. FLETCHER

ULF PERSSON

iv CONTENTS	
Vanishing theorems for cohomology groups	000
JÁNOS KOLLÁR	233
Deformation of a morphism along a foliation	045
YOICHI MIYAOKA	245
Classification of higher-dimensional varieties	260
Shigefumi Mori	209
Tendencious survey of 3-folds	222
MILES REID	000
Young person's guide to canonical singularities	345
MILES REID	040
Affine Algebraic Geometry	
Classification of noncomplete algebraic varieties	
ΤΑΚΑΟ ΓυJΙΤΑ	417
The Zariski decomposition of log-canonical divisors	
YUJIRO KAWAMATA	425
Open algebraic surfaces with Kodaira dimension $-\infty$	
M. MIYANISHI AND S. TSUNODA	435
Classification of normal surfaces	
FUMIO SAKAI	451
Divisors with finite local fundamental group on a surface	
A. R. SHASTRI	467
PART 2	
Groups in Algebraic Geometry	
Rationality of fields of invariants	
IGOR V. DOLGACHEV	3
Automorphisms of K3-like rational surfaces	
BRIAN HARBOURNE	17
Fundamental groups of the complements to plane singular curves	
A. LIBGOBER	29
Galois coverings in the theory of algebraic surfaces	
B. MOISHEZON AND M. TEICHER	47
Vector Bundles	
Geometry of the Horrocks-Mumford bundle	
KLAUS HULEK	69
Variétés de modules de faisceaux semi-stables de rang élevé sur P_2	
J. LE POTIER	87
vector bundles and submanifolds of projective space: Nine open problems	
MICHAEL SCHNEIDER	101

CONTENTS

Geometry in Characteristic p

F-isocrystals and p-adic representations	
RICHARD CREW	111
TORSTEN EKEDAHL	130
Deligne's <i>l</i> -adic Fourier transform	105
LUC ILLUSIE	151
Lifting algebraic curves, abelian varieties, and their endomorphisms to	
characteristic zero	
Frans Oort	165
Hodge Theory	
The geometry of the extension class of a mixed Hodge structure	
JAMES A. CARLSON	199
The local geometry of the Abel-Jacobi mapping	
HERBERT CLEMENS	223
Generic Torelli and infinitesimal variation of Hodge structure	
DAVID A. COX	235
The geometry of the mixed Hodge structure on the fundamental group	0.477
RICHARD M. HAIN	247
STEVEN ZHOKED	283
SIEVEN ZUCKER	200
Enumerative Geometry	
Hilbert scheme of points: Overview of last ten years	
A. IARROBINO	297
Intersection theory and enumerative geometry: A decade in review	
STEVEN L. KLEIMAN WITH ANDERS THORUP	321
Completed quadrics and linear maps	
DAN LAKSOV	371
Local Chern characters and intersection multiplicities	
PAUL C. ROBERTS	389
Enumerating contacts	401
ROBERT SPEISER	401
Algebraic Cycles	
Cycles on arithmetic schemes and Euler characteristics of curves	
SPENCER BLOCH	421
Zero-cycles and K-theory on singular varieties	
MARC LEVINE	451
Zero cycles modulo rational equivalence for some varieties over fields of transcendence degree one	
CHAD SCHOEN	463

v

COI	NTE	ENT	٢S
-----	-----	-----	----

Rational equivalence of 0-cycles on normal varieties over C V. SRINIVAS	• ç `	475
Commutative Algebra		
Syzygies: The codimension of zeros of a nonzero section		
E. GRAHAM EVANS, JR. AND PHILLIP GRIFFITH		485
Intersection problems and Cohen-Macaulay modules		
Melvin Hochster	10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -	491
Decompositions of torsionfree modules over affine curves	t is to	
ROGER WIEGAND AND SYLVIA WIEGAND		503

 $\Psi_{i,j} = \{ i \in [1, 1], \dots, i \in [1, n], j \in [n] \} \}$