

Symbol index

- | | |
|-------------------------------------|--------------------------------------|
| $(12_3, 9_4)$, 118 | V_{22} , 264 |
| (16_6) , 522 | $W(\mathbf{E}_N)$, 334 |
| (l, r) , 152 | W^r , 199 |
| (a_0, \dots, a_r) , 511 | X^{g-1} , 199 |
| 2^k , 402 | X^V , 29 |
| A_f , 36 | $X_0(n)$, 85 |
| A_k , 34 | Δ , 533 |
| B_g , 193 | Δ_k , 533 |
| $C^{(d)}$, 212 | $\Gamma(3)$, 121 |
| C_N , 361 | $\Gamma(\theta)$, 218 |
| $D(f)$, 563 | $\Gamma_*(\mathcal{F})$, 164 |
| D_ψ , 2 | Γ_T , 212 |
| $D_r(\phi)$, 162 | Γ_f , 285 |
| E^V , 1 | Λ_p , 515 |
| E_g , 193 | $\Omega(A_0)$, 511 |
| $F(\mathbb{C})$, 537 | $\Omega(A_0, A_1, \dots, A_r)$, 511 |
| $G(3, \text{AP}_3(f))_\sigma$, 263 | Θ , 199 |
| $G_r(\mathbb{P}^n)$, 21 | $\Theta_k(A, B)$, 98 |
| G_{168} , 273 | δ_x , 171 |
| G_{216} , 121 | γ_k , 516 |
| $H_{A_f}(t)$, 50 | $\mathbb{D}(f)$, 563 |
| $J^{1..N}$, 331 | \mathbb{G}_k , 514 |
| I_Z , 38 | $\mathbb{P}(1, 2, 2, 3, 3)$, 111 |
| K_X , 75 | $\mathbb{P}(\mathcal{E})$, 320 |
| $L_n(q)$, 269 | $\mathbb{V}(\mathcal{E})$, 320 |
| N_θ , 244 | \mathbf{E}_N , 334 |
| Ω_f , 51 | \mathbf{F}_n , 322 |
| $P_{d^k}(X)$, 5 | \mathbf{k}_N , 332 |
| $Q(V)_\pm$, 204 | \mathcal{H}_2 , 522 |
| Q_g , 195 | $\mathcal{H}_3(3)$, 493 |
| R_C , 252 | $\mathcal{L}^{[n]}$, 166 |
| R_θ , 216 | $\mathcal{M}_3^{\text{ar}}$, 250 |
| R_g , 239 | $\mathcal{M}_3^{\text{ev}}$, 250 |
| $S(\mathbb{C})$, 533 | $\mathcal{M}_g^{\text{ev}}$, 197 |
| $S^d(E)$, 1 | \mathcal{TC}_d , 197 |
| $S_d(E)$, 1 | $\mathcal{TC}_{X/S}$, 196 |
| $S_{a,n}$, 347 | \mathfrak{A}_6 , 102 |
| $S_{a_1, \dots, a_k, n}$, 560 | \mathfrak{C} , 252, 517 |
| | $\mathfrak{C}(C)$, 252 |

Symbol index

621

- | | |
|------------------------------------|-------------------------------------|
| \mathbb{C}_W , 528 | $\text{dom}(f)$, 280 |
| \mathbb{C}_ω , 518 | pd, 165 |
| α , 202 | |
| c_x , 171 | $A : B$, 269 |
| $\text{Bl}_X(Z)$, 282 | $\text{adj}(A)$, 7 |
| $\text{Bl}_X(\alpha)$, 282 | ap_f^k , 48 |
| $\text{Bl}_X^+(Z)$, 282 | $\text{AP}(f)$, 36 |
| CR_4 , 478 | |
| N_θ , 245 | $B.A.$, 269 |
| S , 119 | $\text{Bs}(V)$, 281 |
| S_3 , 472 | $\text{b}(V)$, 281 |
| S_W , 528 | |
| S_ω , 518 | $\text{Cat}_k(d, n)$, 48 |
| T , 119 | $\text{Cat}_k(f)$, 50 |
| Z_X , 517 | $\text{Cay}(L)$, 24 |
| $Z_{\mathbb{G}}$, 510 | $\text{Cay}(X)$, 21 |
| μ_n , 245 | |
| $\sigma_m(C)$, 570 | $D_2(n)$, 15 |
| τ_{ij} , 198 | $D_d(n)$, 19, 23 |
| $\text{Mat}_{m,k}$, 160 | ∂_j , 2 |
| $\text{Mat}_{m,k}(r)$, 161 | $D(A; u, v)$, 154 |
| $O(1, N)$, 331 | $D(L)$, 23 |
| $\text{Prym}(\tilde{S}/S)$, 238 | Δ_{i_1, \dots, i_k} , 97 |
| $\text{SL}(2, \mathbb{F}_q)$, 121 | $D_{m,n}$, 65 |
| $\text{Sym}_m(r)$, 181 | |
| $\text{VSP}(f, s)^o$, 47 | E , 1 |
| ϑ_T , 194 | $e(X, x)$, 34 |
| $\vartheta_{i,jkl}$, 246 | $\text{EC}_d(X)$, 9 |
| a_k , 176 | |
| $d(\vartheta)$, 218 | $\text{He}(X)$, 17 |
| d_k , 176 | $\text{He}(f)$, 4 |
| $e_y(\mathbf{x})$, 200 | $\text{He}(f)$, 13 |
| e_k , 176 | $\text{He}(X)$, 13 |
| f_d , 280 | $\text{Hilb}^s(\mathbb{P}(E))$, 39 |
| g_n^1 , 85 | $\mathcal{H}_q(E)$, 57 |
| i_W , 529 | $\text{HS}(X)$, 19 |
| i_ω , 519 | |
| k_{m+1} , 571 | \mathbf{i} , 2 |
| $p_{i_1 \dots i_m}$, 509 | |
| q_θ , 188 | j , 115 |
| r_α , 334 | $\text{Jac}(L)$, 23 |
| r_m , 570 | |
| t_g , 206 | $\langle \ell, \ell' \rangle$, 526 |
| (n, d, k, s) , 45 | $L(Z)$, 54 |
| $[n]$, 591 | Λ , 45 |
| $\text{Arf}(q)$, 191 | |
| $\text{Cr}(n)$, 342 | $\mu(\phi)$, 33 |
| $\text{Jac}(X)$, 114 | $\text{mult}_x X$, 35 |
| $\text{Kum}(A)$, 538 | $\mu(X, x)$, 33 |
| $\text{OG}(2, Q)$, 552 | |
| $O(N)$, 334 | $N(f)$, 25 |
| $\text{Pf}(A)$, 108 | |
| $\text{SO}(n+1)$, 553 | Ω_f , 51 |
| $\text{Sp}(V)$, 191 | Ω_f^y , 51 |
| $\text{Tr}(A)$, 97 | |

Cambridge University Press

978-1-107-01765-8 - Classical Algebraic Geometry: A Modern View

Igor V. Dolgachev

Index

[More information](#)

622

Symbol index $O(E, q)$, 57

st, 20

 $\text{St}(|L|)$, 23 \mathbb{P}^n , 4 $\mathbb{P}(E)$, 4 \mathfrak{T} , 44 $\text{PB}(|L|)$, 25 $T(E)$, 1 \mathcal{P}_n , 84, 85 $\mathbb{T}_x(X)$, 7 $\text{PO}(3)$, 73 \mathfrak{T}_ϕ , 44 $\text{PO}(n+1)$, 63 $\tilde{\mathfrak{T}}_\phi$, 44 $\text{PS}(s, d; n)$, 47 $\text{TC}_d(X)$, 8 Θ_k , 97 $\text{Ram}(\phi)$, 29 \underline{U} , 235 $\langle S_1, S_2 \rangle$, 559 \mathfrak{S}_d , 1 V_d^n , 32 $S(3)$, 120 v_d , 32 $S(E)$, 1 $s(n, d)$, 43 $\text{wrk}(f)$, 52 $\Sigma\text{PGL}(E)$, 11 $\text{SL}(U)$, 3 $X(3)$, 117 $\mathcal{S}_{n,C}$, 86 $\text{St}(X)$, 19 $Z(s)$, 87

Subject index

- (−1)-curve, 248
- (−*n*)-curve, 289
- (16₆)-configuration, 522
- A_k -singularity, 34
- F -locus, 281
- N -lateral, 256
- α -plane, 512
- β -plane, 512
- E_N -lattice, 361
- k -secant line, 215
- s -lateral, 38

- Abel–Jacobi Theorem, 198
- abelian surfaces
 - moduli, 545
- abelian variety
 - principally polarized, 199
- Abo, H., 45
- absolute invariant, 115
- aCM
 - sheaf, 164, 166, 167, 177, 296, 385
 - ϵ -symmetric sheaf, 168
 - of rank 1, 179
 - symmetric, 168
 - subscheme, 296, 297, 299
- ADE singularity, 376
- adjoint
 - orbit
 - minimal, 553
 - nilpotent, 553
 - supminimal, 553
 - variety, 553
- adjugate matrix, 7
- Alberich-Carramiñana, M., 334
- Alexander, J. E., 42
- Alexander, J.W., 345
- Allcock, D., 482
- almost general position, 357
- Altman, A., 170

- anti-polar, 51
 - conic, 277
- anticanonical
 - divisor, 387
 - embedding, 264
 - linear system, 387
 - model
 - of a del Pezzo surface, 384
 - ring, 385
- Antonelli, G., 591
- apolar
 - homogeneous form, 35
 - quadrics, 98
 - ring, 36
 - subscheme, 36
- apolarity
 - duality, 131
 - First Main Theorem, 42
 - map, 48
 - of conics, 112
- Apollonius of Perga, 104
- Apollonius problem, 104
- apparent boundary, 7
- Arbarello, E., xi, 188, 218, 222, 224
- Arf invariant, 191
- Aronhold invariant, 115, 119, 130
 - symbolic expression, 137
- Aronhold set, 249
- Aronhold, S., 144, 278
- arrangement of lines, 256
- Artebani, M., 144, 266
- Artin, M., 351, 424
- associated
 - curve, 570
 - line, 589
 - sets of points, 455
- association involution, 478
- August, F., 451, 452, 505
- azygetic, 207

- set of seven bitangents, 228
- triad of Steiner complexes, 208
- set in a symplectic space, 204
- tetrad of bitangents, 229
- triad in a symplectic space, 204
- triad of bitangents, 228, 229

- Böhning, C., 227
- Babbage's conjecture, 184
- Babbage, D.W., 184, 392
- Baker, H., 111, 215, 225, 405, 422, 425, 440, 503, 504
- Bardelli, F., 250
- Barth's condition, 46
- Barth, W., 46, 85, 90, 112, 279, 324
- Bateman, H., 277, 279, 313
- Battaglini line complex, 547, 588
- Battaglini, G., 590
- Bauer, Th., 85, 90, 112
- Beauville, A., 168, 185, 186, 197, 392, 553
- Beklemishev, N., 479
- Beltrametti, M., xii
- Bertini
 - involution, 317, 413
 - Theorem
 - on elliptic pencils, 344, 346
 - on irreducibility, 75, 305, 443
 - on singularities, 20, 177, 299, 305, 382, 562
- Bertini, E., 345, 346, 424
- bezoutiant, 184
- bielliptic curve, 241
- bifid map, 193
- binary form
 - quadratic invariant, 138
- Binet, J., 591
- binode, 424
- birational map, 280
- Birkenhake, Ch., 216
- biscribed triangle, 244
 - of the Klein curve, 274
- bitangent
 - defined by Aronhold set, 228
 - honest, 35
 - hyperplane, 204
 - matrix, 277
 - their number, 215
- bitangential curve, 215, 225
- Blache, R., 178
- blowing down structure, 355
- Bobillier, E., 66, 112
- bordered determinant, 99, 140, 154, 278
- Bordiga scroll, 300
- Bordiga surface, 300, 423, 440
- Bordiga, G., 300, 423, 440
- Borel, A., 366

- Bos, H., 112
- Bottema, O., 584
- Bourbaki, N., 365, 425, 506, 591
- bracket-function, 467
- Bragadin, G., xii
- Brambilla, M., 42, 45
- branch divisor, 29
- Brianchon's Theorem, 80
- Brianchon, Ch., 80
- Briancon, J., 131
- Brill, A., 214, 225
- Bring curve, 498, 500
- Brioschi covariant, 140
- Brioschi, F., 140
- Bronowski, J., 67
- Bruno, A., 296
- bubble cycle, 308
 - admissible order, 308
 - fundamental, 308
- bubble space, 307
 - height function, 307
 - proper points, 307
- Burch, L., 453
- Burhardt quartic threefold, 186
- Burns, D., 500

- C. van Oss, 276
- Calabi–Yau variety, 25, 528
- Campbell, J.E., 67
- canonical
 - class
 - of a Fano variety, 534
 - of a normal surface, 178
 - of a projective bundle, 321
 - of a ruled surface, 322, 561
 - of blow-up, 332
 - of Grassmann variety, 75
 - equation
 - of plane cubic, 117
 - map, 221
- Caporali quartic, 277
- Caporali, E., 277
- Caporaso, L., 204, 228
- Carletti, E., xii
- Carlini, E., 45
- Cartan cubic, 435
- Cartan matrix, 362
 - irreducible, 363
- Cartan, E., 435
- Carter, R., 483
- Casnati, G., 168
- Castelnuovo, G., 345, 591
- Castelnuovo–Richmond quartic, 478, 481, 524, 545
- catalecticant, 266

Subject index

625

- determinant, 50
 hypersurface, 50
 matrix, 48
- Catanese, F., 168, 177, 183, 186, 187, 238, 239
- Cayley
 cubic surface, 449
 dianode surface, 250
 family of cubic surfaces, 504
 octad, 245
 quartic symmetroid, 28
- Cayley, A., 17, 28, 29, 35, 36, 83, 100, 112, 140, 141, 144, 181, 214, 225, 250, 278, 345, 433, 504, 549, 590, 591
- Cayley–Brill formula, 214
- Cayley–Salmon equation, 503
- Cayley–Zeuthen formulas, 564
- Cayleyan
 contravariant, 140
 curve, 21, 65, 142
 of plane cubic, 127
 variety, 21
 of a linear system, 24
- center variety, 528
- Chandler, K., 42
- characteristic matrix, 330
- Chasles
 covariant quadric, 94, 112
 Principle of Correspondence, 225
 Theorem
 on conjugate triangles, 77
 on linear line complex, 525, 590
 on polar tetrahedra, 93
- Chasles, M., 93, 111, 112, 144, 224, 590–592
- Chipalkatti, J., 45
- Chisini, O., 65, 66
- Chow
 form, 517, 548, 568, 590
 group, 290
 ring, 512
- Ciani, E., 276, 279
- Ciliberto, C., 14, 67, 393
- circle
 complex, 89
 real, 91
- circulant matrix, 48
- class, 4, 30
 of a space curve, 570, 573
 of immersion, 564
- Clebsch
 diagonal cubic surface, 439, 497
 quartic curve, 255
 nondegenerate, 256
 weakly nondegenerate, 256
 Theorem, 334
 transfer principle, 138, 474, 481
- Clebsch, A., 138, 140, 142, 144, 278, 424, 479, 505
- Clemens, C.H., 224
- Clifford, W., 345
- Coble, A., 112, 211, 224, 251, 278, 425, 481, 482, 506, 513
- Cohen, T., 266
- Cohen–Macaulay
 module, 164
 sheaf, 169
 variety, 161
- collineation, 10
- Colombo, E., 482
- complete
 ideal, 283
 pentalateral, 256
 quadrangle, 264
- complex equation
 of a quadric, 99
- complex reflection, 122
 group, 103, 122, 276
- compound matrix, 98
 adjugate, 98
- conductor formula, 171
- conductor ideal, 170
- Cone Theorem, 371
- congruence of lines, 513
 class, 513
 order, 513
- conic
 apolar, 112
 conjugate triangles of, 76
 invariants of a pair, 100
 mutually apolar, 103
 Poncelet n -related, 82
 Poncelet related, 81
 self-polar triangles of, 73
 variety of pairs, 85
- conic bundle, 328
- conjugate
 conics, 112
 linear forms, 51
 linear subspaces, 92
 triangle, 76
- contact
 curves, 155
 conics, 240
 cubics, 244
 of degree $d - 1$, 240
 hyperplane
 of a canonical curve, 189
 manifold, 553
- contravariant, 22, 136
- Cayleyan, 140
- Hermite, 141

- of a pair of conics, 104
- of a pair of quadrics, 112
- of a plane quartic, 266
- of a quartic curve, 265
- of a ternary cubic, 139
- on quartic ternary forms, 139
- Pippian, 141
- Cook, R., 186
- Coolidge, J., 111, 112, 311, 313, 344
- coresidual point, 136, 251
- Cornalba, M., xi, 188, 197, 218, 222, 224
- correlation, 10
 - composition, 11
 - conjugate points, 10
 - dual, 11
 - polarity, 11
- correspondence, 212
 - direct lateral, 215
 - inverse, 213
 - of type (4, 4), 224
- Scorza, 216
- symmetric, 213
- united point, 213
- valence, 213
- with valence, 224
- Corti, A., 346
- Cossec, F., 28, 183, 187, 402, 459
- covariant, 4, 22, 136
 - Brioschi, 140
 - Clebsch, 252, 263
 - Hermite, 140
 - Hessian, 255
 - of a binary cubic, 61
 - of a pair of conics, 104, 107, 108
 - of a pair of quadrics, 112
 - of a plane quartic, 265
 - of a ternary cubic, 139
 - of binary quartic, 61
 - quadric, 94
 - Scorza, 252
- Coxeter, H., 66, 333, 369, 425, 507
- Coxeter–Dynkin diagram, 333, 363
 - extended, 366
- Crauder, B., 293
- Cremona
 - group, 326, 342, 346
 - hexahedral equations, 464
 - inequalities, 286
- Cremona transformation, 284
 - Bertini involution, 317
 - Clebsch Theorem, 334
 - cubo-cubic, 299
 - de Jonquières, 303
 - de Jonquières involution, 301
 - determinantal, 345
 - F-locus, 287
 - fixed points, 310
 - fundamental point, 287, 308
 - Geiser involution, 316
 - given by pfaffians, 517
 - indeterminacy point, 287
 - multidegree, 286
 - of degree 5, 378, 436
 - ordered resolution, 329
 - P-locus, 287
 - quadro-cubic in \mathbb{P}^4 , 293
 - quadro-quadratic, 295
 - regularizable, 342
 - symmetric, 315
- Cremona, L., 67, 112, 143, 144, 186, 225, 286, 319, 344, 424, 505, 513, 585, 591
- cross ratio, 105, 110, 467, 553
- cubic hypersurface, 65, 88, 124, 125, 472, 573
 - catalecticant, 49
 - determinantal, 42, 49, 387
 - fourfold, 392
 - in \mathbb{P}^6 , 388
 - pfaffian, 517
 - symmetroid, 402
 - variety of lines, 589
- cubic plane curve
 - absolute invariant, 115
 - canonical equation, 117
 - covariants and contravariants, 145
 - dual curve, 128
 - equianharmonic, 116
 - harmonic, 116
 - Hesse equation, 117
 - Hesse pencil, 119
 - its Cayleyan curve, 127
 - its Hessian curve, 125
 - Legendre equations, 116
 - Weierstrass equation, 115
- cubic scroll
 - in \mathbb{P}^3 , 444
 - in \mathbb{P}^4 , 444
- cubic surface, 88
 - 4-nodal, 551
 - as a base of a Palatini scroll, 531
 - Cayley–Salmon equation, 450
 - Cayley surface, 449
 - Cremona’s hexahedral equations, 465
 - cyclic, 441, 462
 - dual surface, 504
 - Eckardt point, 440
 - lines on it, 432
 - moduli, 528
 - moduli space, 479
 - non-normal, 444
 - projective generation, 452

Subject index

627

- Sylvester nondegenerate, 260, 462
 symmetroid, 456
 tritangent plane, 412
 cubic symmetroid, 456
 cuspidal edge, 575
 cyclide
 curve, 400
 degenerate surface, 400
 Dupont surface, 422
 quartic surface, 399
- D'Almeida, J., 569
 Dale, M., 41
 Darboux curve, 46, 256
 its equation, 257
 Darboux's Theorem, 83
 Darboux, G., 45, 67, 83, 112, 279, 423
 Dardanelli, E., 463, 479, 480
 de Jonquières involution, 301
 de Jonquières, E., 225, 344
 de Siebenthal, J., 366
 Debarre, O., 384
 defect, 515
 defective, 41
 k -defective, 515
 variety, 515
 degeneracy locus, 530, 533, 566
 degenerate
 homogeneous form, 50
 multilinear form, 26
 del Pezzo surface, 349, 353, 423
 Cremona isometries, 377
 degree, 355
 effective cone, 371
 its secant variety, 388
 lines on it, 383
 marked, 356
 nef cone, 372
 of degree 1, 411, 413, 414, 422, 500
 of degree 2, 242, 248, 250, 405, 410, 424, 441, 443
 of degree 4, 396, 400, 403, 422, 423, 459, 534, 535
 of degree 5, 389–392, 395, 422, 529, 589
 of degree 6, 288, 299, 386–388, 422, 451, 551
 of degree 7, 386
 of degree 8, 386, 422, 444
 del Pezzo, P., 423
 Deligne, P., 306, 308
 Deligne–Hoskin formula, 308
 Demazure, M., 326, 425
 Dersch, O., 225
 Desargues' Theorem, 77, 79
 in space, 91
 Desargues, G., 77, 79, 91
- desmic
 tetrahedra, 96
 determinantal
 hypersurface, 146
 equation, 240
 formula, 511
 hypersurface, 148, 151, 240
 representation
 equivalence, 146
 of singular plane curves, 169
 of surfaces, 177
 quartic surfaces, 185
 variety, 74
 resolution of singularities, 65
 developable surface, 17, 580, 587, 589
 of a space curve, 570
 quartic, 587
 Dickson, L., 144, 186, 506
 difference map, 216
 directrix, 558
 discrepancy divisor, 178
 discriminant, 19
 hypersurface, 30
 cubic, 69
 its degree, 19
 its dual hypersurface, 32
 of linear system, 23
 of quadrics, 15
 tangent space, 32
 of a binary cubic, 60
 of a binary form, 10
 of a binary quartic, 61
 of a general polynomial, 9
 symbolic expression, 138
 divisor class
 big, 353
 nef, 353
 Dixmier, J., 265
 Dixon, A., 47, 186, 503
 Dolgachev, I., 3, 29, 35, 47, 51, 64, 67, 112, 115, 144, 148, 192, 219, 225, 239, 251, 258, 262, 274, 276, 334, 346, 395, 402, 439, 440, 455, 459, 467, 471, 478, 479, 482, 506, 528, 589
 double-point
 class, 563
 formula, 563
 set, 563
 double-six, 427
 azygetic duad, 428
 azygetic triad, 429
 Steiner complex of triads, 429
 syzygetic duad, 428
 syzygetic triad, 429
 Du Val singularity, 376

- Du Val, P., 345, 376, 406, 412, 424, 506
 dual
 homogeneous form, 48
 dual variety, 29
 degree, 33
 of a hypersurface, 29
 of a plane cubic, 142
 of a Veronese surface, 69
 of Grassmann variety, 519
 of Segre cubic primal, 478
 projective space, 4
 Reflexivity Theorem, 29
 duality map, 30
 dualizing sheaf, 170
 Dupin, Ch., 423
 Durège, H., 144
 Dyck, W., 279
 Dynkin curve, 373
 Dynkin, E., 333, 366
- Eckardt point, 440, 480–482
 defining an involution, 441
 Eckardt, F., 506
 Edge variety, 392
 Edge, W., 274, 392, 395, 404, 422, 423, 581, 585, 592
 effective cone, 371
 Ehrenborg, R., 42
 Ein, L., 293
 Eisenbud, D., 36, 37, 219, 385, 452, 455
 elementary transformation, 324
 of vector bundles, 324
 Ellingsrud, G., 297, 299
 Elliott, E., 145
 elliptic normal curve, 114
 Elte, E., 425, 507
 Emch, A., 91
 Enriques diagram, 308
 Enriques surface, 463, 589
 Enriques, F., 65, 66, 308, 326, 463
 envelope, 4
 enveloping cone, 9
 equianharmonic
 plane cubic, 131
 quadruple, 105
 Euler exact sequence, 321
 dual, 321
 Euler formula, 6
 exceptional
 curve, 351
 divisor, 282
 section, 320
 type, 335
 vector, 367
 extremal ray, 371
- Fano variety, 64, 109, 263, 264, 355, 501, 528, 531, 534
 degree, 263
 genus, 263
 index, 263
 of genus 12, 264, 502
 toric, 288
 Fano, G., 264
 Farkas, G., 221
 fat point, 40
 Fay, J., 222
 Fermat hypersurface
 cubic curve, 125
 cubic surface, 442, 480, 497
 plane cubic, 129, 130, 143, 253
 plane quartic, 252, 269, 272, 276
 Ferrers, N., 112
 fiber
 of a sheaf, 162
 Fielder, W., 479, 506
 Finkelberg, H., 477
 First Fundamental Theorem, 3, 509
 Fischer, G., 16, 35
 Fitting ideal, 162
 Flatto, L., 90, 112
 Formanek, E., 159
 Frahm, W., 67
 Freitag, E., 482
 Fresnel's wave surface, 551
 Fresnel, A., 551
 Fricke, R., 274
 Frobenius, G., 278
 Fulton, W., 35, 104, 134, 163, 290, 394, 477, 511, 512, 530, 533, 563, 565, 566, 591
 functional determinant, 13
 fundamental
 cycle, 351
 point, 281
 set, 210
 normal, 211
 weight, 366
- Göpel, A., 224
 Gallarati, D., xii
 Gantmacher, F., 397
 Gauss curvature, 16
 Gauss map, 30, 218, 222, 516
 Geiser involution, 316, 408, 409
 Geiser, C., 345, 424
 Gelfand, I., 19, 29, 35, 144, 517, 568
 general position, 357
 genus 4 curve, 189, 214, 224, 237, 241, 277, 414, 438, 498, 573
 geometric basis, 355
 geometric marking, 355

Subject index

629

- Geramita, A., 43, 67
 Gerbardi, F., 85, 102
 Gergonne, J., 66
 Giambelli, G., 187
 Giorgini, G., 590
 GIT-quotient, 81, 101, 111, 228, 266, 395, 467, 479, 506
 Gizatullin, M., 45, 245
 Glass, J., 278
 Godeaux, L., 346
 González-Aguilera, V., 269
 Gonzales-Sprinberg, G., 345
 Goodman, R., 57
 Gordan, P., 14, 102, 112, 144, 275
 Gorenstein
 curve, 174
 Fano variety, 264
 local Artinian ring, 36
 normal surface, 178
 ring, 171
 singularity, 352
 Gosset, T., 369, 425, 507
 Grace, J., 108, 112, 145
 Grassmann bundle, 510
 Grassmann variety, 21, 508
 canonical sheaf, 510
 cohomology ring, 511
 degree, 512
 its dimension, 510
 of lines, 508
 Plücker embedding, 508
 Plücker equations, 509
 secant variety of, 513, 515
 tangent sheaf, 510
 tangent space, 516
 universal quotient bundle, 509
 universal subbundle, 509
 Grassmann, H., 143, 505, 590
 Greuel, G.-M., 174, 176
 Griffiths, Ph., xi, 28, 35, 112, 134, 188, 198, 215, 218, 222, 224, 358, 570
 Gross, B., 191
 Grothendieck A., 166
 Grushevsky, S., 221
 Guàrdia, J., 234
 Gundelfinger quartic, 245
 Gundelfinger, S., 144, 245

 Hacking, P., 482
 Halphen pencil, 129, 344, 346
 Halphen, G., 144, 346
 Hankel matrix, 48
 Hankel, H., 48
 harmonic
 binary quartic, 116
 conic-locus, 113
 conjugate, 72, 105, 110
 cubic curve, 116
 line complex, 547
 polar line, 118
 polynomial
 as a pfaffian, 60
 of degree 2, 98
 quadruple, 105
 tensor, 56
 harmonizant, 67
 Harris, J., xi, 7, 28, 35, 42, 74, 112, 117, 134, 175, 181, 188, 198, 215, 218, 222, 224, 347, 358, 394, 559, 570, 572
 Harris, J., 191
 Hartshorne, R., xii, 8, 114, 165, 172, 213, 270, 283, 290, 303, 305, 320, 322, 324, 350, 358, 382, 510, 558, 560, 562, 569, 583, 584
 Hassett, B., 266
 Hawkins, T., 591
 Heisenberg group, 493, 495, 522, 543, 547
 Henderson, A., 504
 Hermite
 contravariant, 141
 covariant, 141
 curve, 143
 Hermite, Ch., 141
 Hesse
 arrangement of lines, 118
 dual, 119
 canonical equation
 of plane cubic, 117
 form
 of a plane cubic curve, 114
 group, 121
 pencil, 119
 quadrilateral, 110
 Theorem, 110
 Hesse, O., 67, 110, 112, 117, 118, 144, 154, 278
 Hesse–Salmon configuration, 142
 Hessian
 determinant, 4
 hypersurface, 13
 matrix, 13
 of a binary quartic, 61
 surface, 65
 hexad, 230
 Hilbert modular surface, 500
 Hilbert scheme
 of aCM subschemes, 297
 of lines, 264
 of projective plane, 81, 109, 130, 131
 of projective space, 47
 punctual, 39
 Hilbert, D., 47, 67, 453

- Hilbert–Birch Theorem, 504
 Hill, J. E., xii
 Hirschowitz, A., 42
 Hirzebruch, F., 500
 Hitchin, N., 57, 60, 112, 502
 Hodge Index Theorem, 358
 Hodge type inequality, 286
 Hodge, W., 397, 509, 511, 591
 homaloid, 284, 345
 homaloidal
 net
 characteristic, 306
 polynomial, 148
 type, 335
 homology, 440
 harmonic, 440
 its center, 440
 Hoskin, M., 306, 308
 Hosoh, T., 506
 Hudson, H., 342, 344
 Hudson, R.W., 590
 Humbert curve of genus 5, 404, 405
 Humbert, G., 404
 Hunt, B., 479
 Hurwitz formula, 29
 Hurwitz’s Theorem, 270
 Hurwitz, A., 225, 270
 Hutchinson, J., 506
 hyperelliptic curve, 224
 2-torsion divisor classes, 193, 210
 and Kummer surface, 539
 de Jonquères transformations, 318
 equation, 192
 its Jacobian variety, 534
 of genus 3, 185, 224
 plane model, 319, 343
 theta characteristics, 194, 212
 Weil pairing, 194
 hyperosculating point, 570
 multiplicity, 572
 their number, 572
 hyperplane, 4
 hypersurface, 4
 monoidal, 301
 submonoidal, 301
 Iano-Fletcher, A., 192
 Iarrobino, A., 36, 40, 47, 50, 67, 309
 icosahedron
 fundamental set, 499
 icosahedral set, 501
 Igusa quartic, 545
 Iliev, A., 47
 incidence variety, 510
 indeterminacy point, 280
 infinitely near point, 307
 inflection
 bitangent, 226, 266
 point, 17
 order, 18
 tangent, 12, 65, 276
 honest, 35
 triangle, 118
 integral closure, 282
 intersection matrix, 352
 invariant, 136
 absolute, 116
 Aronhold, 137
 bracket-function, 467
 First Fundamental Theorem, 3
 Joubert, 471
 of 6 lines in \mathbb{P}^3 , 527
 of a pair of binary forms, 106
 of binary forms, 10
 of binary quartic, 117
 of binary quartics, 49, 61, 104
 of complex reflection group, 122
 of cubic surface, 479
 of Hesse group, 123
 of plane quartics, 265
 of ternary cubic, 136
 of two symmetric matrices, 99
 of Valentiner group, 103
 relative, 123
 symbolic expression, 137
 tact, 100
 Toeplitz, 45
 weight, 137
 inversion transformation, 314
 Inversive group, 326
 Iskovskikh, V., 264, 346
 isologue, 309
 center, 309
 net, 310
 isotropic subspace, 190
 Izadi, E., 221, 239
 j-invariant, 115
 Józefiak, T., 181
 Jacobi, C., 278
 Jacobian
 curve, 410
 determinant, 13
 hypersurface, 23
 ideal, 33
 variety, 197
 intermediate, 534
 Jessop, C., 405, 423, 590
 Jeurissen, R., 276
 join

Subject index

631

- of projective subbundles, 558
- of scrolls, 559
- Jordan, C., 425, 506
- Joubert functions, 471
- Joubert, P., 471, 506
- Jung, H., 171
- Jung–Milnor formula, 171

- K3 surface, 28, 56, 264, 395, 404, 405, 463, 537, 538, 543, 550
- Kane, R., 365, 406
- Kanev, V., 47, 67, 225, 258, 262, 274, 276
- Kantor, S., 345, 425, 506, 591
- Kapranov, M., 19, 29, 35, 112, 144, 439, 440, 517, 568, 589
- Katsylo, P., 227, 239, 250
- Katz, S., 293
- Keel, S., 482
- Kers, C., 112
- Keum, J., 506, 546
- Kirkman points, 111
- Kirkman, J., 111, 112
- Kleiman, S., 35, 170, 510
- Klein
 - coordinates, 522
 - quadric, 512
 - quartic curve, 252, 270, 276, 589
 - automorphisms, 273
 - its bitangents, 277
 - its hessian, 275
 - sextic, 499
 - singularities, 376
- Klein, F., 270, 274, 375, 376, 400, 499, 500, 505, 512, 590
- Kleppe, H., 74
- Knörrer, H., 176
- Kneebone, G., 591
- Kodaira
 - fibers of elliptic fibration, 415, 550
- Kodaira, K., 415, 550
- Kollár, J., 371, 372, 375, 425
- Kondō, S., 266, 482, 546
- Kravitsky, N., 184, 186
- Krazer, J., 224
- Kummer cones, 423
- Kummer surface, 536, 538
 - and 5-cuspidal sextic, 404
 - and Segre cubic, 589
 - as the Hessian surface, 506
 - associate hyperelliptic curve, 536, 538
 - associated to a quadratic line complex, 538
 - automorphisms, 547
 - double plane model, 542
 - octic model, 539
 - of an abelian surface, 538
 - quartic equation, 543
 - self-duality, 546
 - Tetrahedroid, 549
 - wave surface, 552
- Kummer variety, 239, 538
 - jacobian, 538
- Kummer, E., 423, 590

- Lüroth quartic, 68, 257
 - determinantal representation, 260
 - pentalateral theta characteristic, 262
- Lüroth, J., 255, 257, 279
- Lê Dũng Tráng, 33
- La Hire, Ph., 113
- Laguerre net, 248, 312
- Laksov, D., 74
- Lange, H., 216
- Laplace operator, 57
- Lascoux, A., 181
- lattice, 331, 358
 - $I^{1,N}$, 331, 360
 - E_N , 334, 361
 - discriminant, 358
 - discriminant group, 358
 - embedding, 360
 - even, 360
 - isometry, 360
 - nondegenerate, 358
 - orthogonal group, 360
 - primitive embedding, 360
 - signature, 358
 - sublattice, 358
 - finite index, 358
 - primitive, 358
 - unimodular, 358
- Lazarsfeld, R., 282, 286, 294, 354, 563
- Le Potier, J., 263
- LeBarz, P., 216
- Lefschetz’s fixed-point formula, 483
- Lefschetz, S., 483
- Legendre equation
 - of a plane cubic, 116
- Legendre, A.-M., 116
- Lehavi, D., 228, 243
- Libgober, A., 175
- Lie, S., 518, 590
- Lifšic, M., 186
- Lindemann, F., 140, 142, 144, 424
- line complex, 517
 - apolar, 520
 - cubic
 - Montesano, 589
 - degree, 517
 - linear, 517
 - center, 518

- monoidal, 589
- quadratic, 99, 156, 531
 - Battaglini, 547
 - harmonic, 547
 - Kummer surface, 538
 - lines on it, 537
 - of tangent lines to a quadric, 156
 - tangential, 552
 - tetrahedral, 553, 586
- rank, 518
- singular line, 533
- singular variety, 533
- special, 517
- line-equation
 - of a quadric, 99
- linear system
 - base ideal, 281
 - base locus, 281
 - base scheme, 281
 - base-point-free, 281
 - homaloidal, 284
- linearly d -independent, 39
- lines
 - conjugate, 77
 - in a quadratic line complex, 537
 - on a cubic threefold, 589
 - on a weak del Pezzo surface, 383
 - six linearly dependent, 526
 - two transversals to four, 525
- Lipman, J., 409
- Lo Giudice, G., 239
- London, F., 45, 68, 144
- Looijenga, E., 266, 425, 482
- Loria, G., 590
- Lossen, C., 14
- Lurie, J., 435

- Möbius, A., 590
- Müller, H., 591
- Mérindol, J., 425
- Macaulay, F.S., 36, 187
- MacLaurin, C., 111, 344
- Magnus, L., 345, 504
- Manin, Yu., 346, 425, 483, 507
- Marcus, A., 186
- marking, 356
 - geometric, 356
- Massoti Biggiogero, G., 66
- Mathews, R., 96
- Mella, M., 47, 393
- Melliez, F., 276, 277, 502
- Meyer, W., xii, 504, 513
- Michel, J., 112
- Miles, E.P., 58
- Milne, W., 141

- Milnor number, 33
- Milnor, J., 171
- minimal degree varieties, 347
- minimal rational ruled surface, 320
- minus vector, 492
- mixed combinant, 136
- mixed concomitant, 136
- modular
 - family, 120
 - surface, 500
- moduli space
 - R_g , 239
 - $\mathcal{M}_3^{\text{ev}}$, 250
 - $\mathcal{M}_g^{\text{ev}}$, 197
 - of 6 points, 477, 480
 - of 7 points, 250
 - of abelian surfaces, 545
 - of bielliptic curves, 277
 - of cubic surfaces, 440, 479, 482, 491, 528
 - of determinantal representations, 159
 - of elliptic curves, 121
 - of nets of quadrics, 262
 - of plane quartics, 266
 - of quadratic line complexes, 549
 - of reflexive sheaves, 170
- Monge's differential equation, 518
- Mori, S., 371, 372, 375
- Morley, F., 262, 279, 326
- Morley, F.V., 326
- Morrison, I., 572
- Moutard, M., 423
- Muir, T., 65
- Mukai skew-form, 54
- Mukai, S., 47, 75, 112, 244, 264, 265, 396, 501
- multidegree
 - of a rational map, 285
- multiplicity
 - of a singular point, 351
- Mumford, D., 172, 178, 188, 189, 196, 200, 213, 224, 239, 352

- Nagata, M., 345
- Naruki, I., 482, 491, 500
- net, 45
 - of conics, 109, 110, 143, 241, 243, 245, 386
 - of cubics, 250, 317
 - of quadrics, 45, 46, 246, 247, 260, 261, 265, 274, 460, 462, 513, 584
- Newton, I., 144
- Nikulin, V., 360
- node, 34
 - on a surface
 - even set, 183
 - weakly even set, 183
- Noether formula, 566

Subject index

633

- Noether's Reduction Theorem, 339
 Noether, M., 14, 345
 nondegenerate
 Clebsch quartic, 256
 homogeneous form, 50
 subvariety, 347
 normal
 linearly, 349
 projectively, 177, 385
 scroll, 557
 subvariety, 349
 surface
 canonical class, 178
 intersection theory, 178
 normal system, 210
 null polarity, 11
 null-circle, 90
 null-plane, 520
 null-point, 520
 null-system, 11, 210, 520
- OADP subvariety, 392, 423
 Okonek, C., 300, 531
 Oort, F., 112
 ordinary singularities, 563
 orthogonal group, 57, 63, 331, 334
 Ortland, D., 219, 251, 395, 455, 471, 478
 oscnode, 407
 osculating
 developable surface, 570
 hyperplane, 142
 plane, 570
 sheaf, 570
 Ottaviani, G., 42, 43, 45, 130, 263, 279, 300, 313, 591
- pairs of conics
 GIT-quotient, 101
 invariants, 100
 Palatini
 ruled surface, 531
 scroll, 530
 Palatini, F., 47, 67, 530, 591
 Pan, I., 302, 342, 345
 parabolic hypersurface, 17
 parabolic point, 17
 partial normalization, 171
 Pascal line, 80
 Pascal's Theorem, 79
 Pascal, B., 79
 Pascal, E., 66, 279, 504, 590
 Pash, M., 590
 Pedoe, D., 397, 509, 511, 591
 pencil, 45
 of conics, 83, 131, 135, 144, 237, 276, 390, 585
 of cubics, 126, 129, 159
 of quadrics, 100, 246, 250, 396, 397, 403, 404, 423, 424, 534, 550, 556, 587
 of quartics, 252
 Perazzo primal, 504
 Perazzo, U., 504
 period matrix, 198
 perspectivity, 77
 center, 77
 line of, 77
 of simplexes, 91
 perspectrix, 77
 Persson, U., 415
 Petersen graph, 390, 422
 Pfaff differential equation, 518
 pfaffian, 74, 108, 130, 514, 516, 529
 pfaffian hypersurface, 515
 and Palatini scroll, 530
 cubic, 517
 cubic fourfold, 392
 cubic in \mathbb{P}^{14} , 517
 Pfister, G., 174
 Picard scheme, 198
 relative, 159
 Piene, R., 570, 573
 Pieri's formula, 512
 pinch point, 563
 Pinkham, H., 351, 375, 425
 Piontkowski, J., 172, 176
 Pippian contravariant, 141
 pippiana, 67
 Plücker
 coordinates, 509
 formula
 for hypersurfaces, 33
 for plane curves, 35
 for space curves, 571
 formulas, 33
 lines, 111
 Plücker, J., 66, 111, 225, 278, 504, 590
 Plücker–Teissier formula, 33, 60
 plane quartic curve
 even theta characteristic, 246
 simple singularities, 406
 Plaumann, D., 277
 plus vector, 492
 Poisson bracket, 53
 polar
 s-gon, 38
 s-hedron, 38
 generalized, 39
 nondegenerate, 38
 base locus, 25

- bilinear form, 5, 189
 - duality, 520
 - hypersurface, 5
 - first, 7
 - second, 124
 - line, 71, 520
 - linear subspaces, 92
 - map, 28
 - net of quadrics, 45
 - pairing, 2
 - pentagon, 255
 - pentalateral, 255
 - quadrangle, 129
 - generalized nondegenerate, 129
 - quadric, 12
 - subspace, 528
 - polarity, 11
 - polarization map
 - partial, 2
 - total, 1
 - Polarraum, 111
 - pole, 71, 74
 - Polo-Blanco, I., 584
 - poloconic, 140, 141
 - polygon, 82
 - side, 82
 - vertex, 82
 - polytope
 - regular, 369
 - semi-regular, 369
 - Poncelet related curve, 86
 - Poncelet, J.-V., 111, 278, 344
 - Popescu, S., 219, 455
 - porism, 91
 - Postulation formula, 284
 - Pragacz, P., 181
 - prime-form, 222
 - principal curve
 - total, 330
 - principal parts, 569
 - Principle of Correspondence, 224
 - pro-Hessian surface, 17
 - projective bundle, 320
 - canonical class, 321
 - projective coordinates, 4
 - projective generation, 163
 - determinantal varieties, 163
 - of a cubic curve, 144
 - of a cubic surface, 187, 452
 - of plane curves, 310
 - of rational normal curve, 134
 - Steiner's construction, 93
 - projective space, 4
 - prosector, 77
 - Prym canonical map, 223
 - Prym map, 239
 - Prym, F., 223
 - quadratic form
 - even, 191
 - odd, 191
 - quadratic transformation, 314
 - quadric
 - complex equation, 99
 - invariants of a pair, 96
 - line-equation, 99
 - polar pentahedron, 95
 - polar tetrahedra, 93
 - quadric bundle, 156, 531
 - discriminant locus, 531
 - quadrilateral, 88, 110
 - quartic hypersurface
 - Burhardt, 186
 - Castelnuovo–Richmond, 478, 481, 524, 545
 - Igusa, 545
 - Scorza, 189
 - quartic plane curve
 - Aronhold invariant, 258
 - automorphisms, 266
 - bitangents, 226
 - Aronhold sets, 228
 - azygetic triads, 228
 - Steiner complexes, 226
 - syzygetic triads, 226
 - Caporali, 277
 - Clebsch, 255
 - contravariants, 266
 - covariants, 265
 - determinantal equation, 235
 - symmetric, 239
 - invariants, 265
 - Klein, 270
 - Lüroth, 257
 - the variety of sums of powers, 263
 - quartic surface
 - 4-nodal, 402
 - del Pezzo, 397
 - desmic, 96
 - developable, 580
 - dual of Cayley cubic, 449
 - Gundelfinger, 245
 - Kummer, 404
 - ruled, 575
 - classification, 576
 - equations, 586
 - Segre, 397
 - Steiner, 449
 - Tetrahedroid, 549
 - wave surface, 551
 - Quippián contravariant, 141

Subject index

635

- Ramanujam's Vanishing Theorem, 354
 Ramanujam, C., 354
 Ranestad, K., 47, 263, 276, 277, 502
 rank
 of a curve, 570
 rational elliptic surface, 344, 414, 415, 423
 rational map, 280
 inverse transform under, 281
 its resolution, 282
 rational normal curve
 associated to a net of quadrics, 264
 equations, 135
 of degree 4, 581, 589
 secant variety, 49, 88
 secants of, 513
 rational plane curve
 determinantal equation, 184
 Raven, D., 112
 real sphere, 400
 reciprocity theorem, 6
 reflection, 334, 365
 reflexive sheaf, 165
 Reflexivity Theorem, 29
 Rego, C., 170
 regular linear system, 26
 Reichstein, Z., 144
 Reid, M., 351, 353, 504
 relative Picard scheme, 196
 Reskine, C., 297
 resolution
 minimal, 330
 Reye
 congruence, 28
 line, 24
 line complex, 591
 variety, 27
 Reye, T., 67, 111, 112, 506, 513, 590
 Richmond, H., 47, 67
 Riemann
 constant, 200
 equation of bitangents, 230
 Riemann, B., 189, 200, 223, 224, 278
 Riemann–Kempf Theorem, 199
 Riemann–Mumford relation, 189
 Ritzenthaler, C., 243
 Rodenberg, C., 463
 Rodriguez, R., 269
 Room, T., 260, 440
 root, 362
 basis, 362
 canonical, 363
 irreducible, 362
 effective, 372
 function, 223
 lattice, 363
 nodal, 372
 positive, negative, 364
 sublattice, 366
 Rosanes, J., 67, 112, 345
 Rosenberg, J., 506
 Rosenhein, J., 224
 Rota, G.-C., 42
 Roth, L., 299
 Roth, P., 278
 Rowe, D., 591
 ruled surface, 17, 560
 of degree 4, 585
 contact curve, 564
 elliptic, 575
 elliptic of degree 6, 531
 exceptional section, 561
 genus, 562
 minimal, 561
 minimal surface F_n , 322
 normalized vector bundle, 561
 of degree 3, 443, 575
 of degree 8, 300
 Palatini, 531
 ruled variety, 557
 Russo, F., 393

 Saavedra Rivano, N., 224
 Salmon
 conic, 106, 107
 envelope conic, 107
 invariant, 266
 Salmon, G., 67, 111–113, 115, 136, 144, 215,
 225, 247, 252, 266, 278, 479, 504, 506, 591
 Salvatti Manni, R., 221
 Sankaran, G., 239
 Sarkisov program, 346
 Sarkisov, V., 346
 satellite conic
 of a plane cubic, 143
 Scheyer, F.-O., 47
 Schläfli equation, 142
 Schläfli's Theorem, 503
 Schläfli, L., 144, 505
 Schlesinger, O., 143, 144
 Schoenberg, I., 90
 Schoute, P., 506
 Schröter, H., 145
 Schreyer, F.-O., 263, 264
 Schubert
 class, 511
 cycle, 511
 variety, 511
 special, 511
 Schubert, H., 591
 Schur quadric, 437, 498, 527

- Schur sextic, 438, 499
 Schur, F., 436
 Schwarz, H., 592
 Schwarzenberger vector bundle, 86, 588
 Schwarzenberger, R. L. E., 86, 112
 Scorza
 correspondence, 216, 221, 224, 568
 general pair, 219
 covariant, 252
 map, 265
 quartic hypersurface, 221
 Scorza, G., 216, 219, 225, 279
 scroll, 349, 444, 530, 557, 577
 r -directrix, 558
 Bordiga, 300
 cubic in \mathbb{P}^3 , 444
 cubic in \mathbb{P}^4 , 444
 degree, 559
 generator, 557
 join, 559
 normal, 557
 Palatini, 530
 rational normal, 347
 of dimension 2, 347, 575
 tangential, 577, 579, 580
 secant variety, 41
 defective, 44
 of a del Pezzo surface, 388
 of a rational normal curve, 42, 65, 588
 of Grassmann variety, 513
 of rational normal curve, 49
 of Segre–Veronese variety, 44
 of Veronese variety, 41, 42
 Segre
 class, 290
 cubic primal, 472, 529, 543, 544, 549, 589
 quartic surface, 397
 symbol, 397, 424
 variety, 65, 422, 514, 559
 Segre, B., 505, 591
 Segre, C., 225, 345, 400, 423, 505, 588, 590
 Segre–Veronese embedding, 43
 Segre–Veronese variety, 40
 secant variety of, 45
 self-associated sets, 219
 self-conjugate
 hexad, 111
 pentad, 95
 polyhedron, 91
 tetrad in the plane, 110
 tetrahedron, 92
 semi-stable points, 467
 Semple, J., 299, 591
 Sernesi, E., 204, 228, 279, 313
 Severi F., xi
 Severi–Zak variety, 294, 515
 sextactic point, 142
 Shafarevich, I. R., xii
 Shephard, G., 122
 Shepherd-Barron, N., 293
 Shioda, T., 265
 simplex, 91
 edge, 91
 face, 91
 facet, 91
 mutually polar, 91
 vertex, 91
 singular line, 537
 singular point
 of Kummer variety, 538
 singular subspace, 190
 singular variety
 of a quadratic line complex of lines, 531
 of line complexes of lines, 528
 singularity
 A_k , 34
 ADE, 175
 binode, 424
 complete intersection, 33
 cusp
 ordinary, 34
 rhamphoid, 407
 Du Val, 376
 Gorenstein, 352
 multiplicity, 351
 node, 34
 ordinary isolated, 31
 rational, 351
 rational double point, 351
 rational Gorenstein, 352
 simple, 175, 376
 small resolution, 477
 tacnode, 407
 sixer, 426
 Smith, R., 239
 socle, 36
 Sommerville, 99
 Sommerville, D., 113
 Sousley, C., 481
 space curve
 m -rank, 570
 associated, 570
 dual, 570
 ordinary point, 570
 Plücker formula, 571
 quartic curves
 species, 117
 stationary point, 570
 Springer, T., 122, 416
 stable points, 467

Subject index

637

- standard quadratic transformation, 287
 degenerate, 288
 standard symplectic basis, 190
 standard tableaux, 471
 star, 163
 star-duality, 555
 Steenbrink, J., 276
 Steiner
 complex
 in a symplectic space, 206
 complexes
 azygetic triad, 208
 syzygetic, 207
 syzygetic triad, 208
 points, 111
 polygon, 143
 projective generation, 93, 134
 quartic surface, 70
 its dual, 449
 Steiner, J., 66, 70, 90, 93, 111, 112, 134, 143,
 144, 278, 424, 505, 506
 Steinerian hypersurface, 19, 23
 as a covariant, 22
 its degree, 20
 of a linear system, 23
 Steinerian map, 20
 Stipins, J., 96
 Stuart, T., 47
 Sturm, R., 111, 345, 505, 592
 Sturmfels, B., 277
 sums of powers
 variety $VSP(f, s)$, 46, 56
 0-dimensional, 47
 explicit description, 47
 Fano model, 263
 of a binary form, 62
 of a conic, 64
 of a plane curve, 264
 of a quadric, 64
 of a set of forms, 45
 Waring problem, 47
 Sylvester
 equation of a cubic surface, 261, 462
 nondegenerate, 260
 pentahedron, 463
 Sylvester, J., 47, 67, 136, 345, 424, 504
 symbolic method, 3, 137
 symmetric algebra, 1
 symmetric power, 1
 symmetroid surface, 181
 cubic, 238
 quintic, 185
 symplectic group, 191
 syntheme, 465
 syzygetic
 pencil, 144
 Steiner complexes, 207
 tetrad in a symplectic space, 204
 tetrad of bitangents, 229
 tetrad of theta characteristics, 206
 tetrads in Steiner complex, 224
 triad in a symplectic space, 204
 triad of Steiner complexes, 208
 triad of theta characteristics, 205
 Szpiro, L., 297
 tact-invariant, 100
 Takagi, H., 219
 tangent cone, 8
 tangent space
 embedded, 7
 tangential variety
 of a space curve, 570
 of a Veronese surface, 69
 of an elliptic normal curve, 573
 of rational normal curve, 572
 tautological exact sequence, 509
 Taylor, D., 141
 Teissier, B., 33
 Terracini's Lemma, 41, 42
 Terracini, A., 41, 45, 67
 tetrahedral line complex, 586
 Tetrahedroid quartic surface, 549
 Tevelev, E., 29, 482
 theta
 characteristic, 151, 169, 188
 effective, 151
 even, odd, 151
 Scorza invariant of, 218
 syzygetic triad, 204
 their number, 189
 vanishing, 189, 224
 divisor
 even, odd, 199
 symmetric, 199
 factor, 200
 function
 Riemann, 200
 with characteristic, 200
 theta function, 200
 Thom–Porteous formula, 533
 Thomas, A., 186
 Thomsen, H., 266
 Tikhomirov, A., 263
 Tikhomirov, S., xii
 Timms, G., 401, 425
 Todd, J., 112, 122, 185, 506
 Toeplitz invariant, 45, 462
 Toeplitz map, 44
 Toeplitz, E., 45, 68, 462

638

Subject index

- Togliatti, E., 422
 Top, J., 584
 toric variety, 326
 Fano, 288
 of type A_n , 299
 surface, 387
 torsal generator, 567, 589
 torsion-free sheaf
 global invariant, 172
 local invariant, 174
 local type, 172
 total, 465
 transversal lines, 452, 526
 Trautman, G., 112
 triangle, 71
 circumscribed, 76
 inscribed, 76
 polar, 71
 polar degenerate, 73
 self-conjugate, 76
 side, 71
 vertex, 71
 triangles
 perspective, 77
 trigonal construction, 238
 trisecant
 plane, 73, 588
 ruled surface, 300
 trisecant line, 299, 529, 536, 560
 tritangent plane, 433
 conjugate triads, 431
 trope, 396, 545
 Tu, L., 74, 181
 Turnbull, H.W., 60, 99, 112
 Tyurin, A., 186, 263, 324, 455
- Umemura, H., 501
 universal
 quotient bundle, 63
 subbundle, 63
 unode, 424
 Urabe, T., 425
- $V(f)$, 4
 Valentiner group, 102
 Valentiner, H., 102
 Valles, J., 109, 112, 422
 Van de Ven, A., 294
 van den Bergh, M., 159
 van den Dries, B., 51
 van der Geer, G., 278, 478
 van der Put, M., 584
 van der Vries, J., 589
 van Geemen, B., 260, 463, 479, 480, 482
 Varley, R., 405
- vector bundle, 320
 Veronese map, 32, 40
 Veronese surface, 41, 109, 588
 dual variety of, 69
 of degree 4, 69
 projected, 70, 529
 Veronese variety, 32, 40
 embedded tangent space, 65
 its dual hypersurface, 32
 secant variety of, 41, 42, 67, 240
 tangent space, 42
 Verra, A., 239, 243, 296, 541
 Vinnikov, V., 186
 Vinzant, C., 277
 von Staudt's Theorem, 554
 von Staudt, G., 112, 554, 590
 Voss, A., 590
- Wall, C.T.C., 186
 Wallach, N., 57
 Waring problem, 46
 Waring rank, 52
 exceptional cases, 52
 web, 45
 Weber, H., 223, 224, 235, 275, 278, 506
 Weierstrass
 equation
 of a plane cubic, 115
 of elliptic surface, 415
 form
 of a plane cubic, 114
 point, 573
 Weierstrass, K., 144, 424
 weighted projective space, 192
 adjunction formula, 192
 weights
 miniscule
 tritangent trio, 430
 Weil
 divisor, 165
 pairing, 188
 Theorem, 534
 Weil, A., 534
 Weiler, A., 424, 590
 Weyl chamber, 365
 face, 365
 Weyl group, 334, 365
 Weyl, H., 506
 White surface, 440, 504
 White, F.S., 440
 White, H.W., 145
 Williams, E., 58
 Wiman pencil, 395, 423
 Wiman plane sextic, 395, 501
 Wiman, A., 506

Cambridge University Press

978-1-107-01765-8 - Classical Algebraic Geometry: A Modern View

Igor V. Dolgachev

Index

[More information](#)*Subject index*

639

Winger, R., 501
Wirtinger plane sextic, 237
Wirtinger, W., 238
Wong, B., 585, 592
Wronskian, 588

Young, A., 112, 145
Young, W., 591

Yuzvinsky, S., 96

Zak, F., 29, 41, 294
Zariski, O., xi, 283, 308
Zelevinsky, A., 19, 29, 35, 144, 517, 568
Zeuthen, H., 591
Zindler, K., 590
Zuccone, F., 219