

Index

- Abel's Theorem, 119
- Abelian variety, 108
 - dual, 110
 - (principally) polarized, 108
 - reducible, 109
- Abel-Jacobi map, 119
- adjunction formula, 111
- affine Lie-Poisson group, 30
- a.c.i. system, 131
 - algebraic completely integrable system, 131
 - completable, 131
 - irreducible, 132
 - (polarization) type of, 132
- analytic Poisson manifold, 65
- ample line bundle, 105

- base space, 49
- Bechlivanidis-van Moerbeke system, 181
- bi-Hamiltonian
 - hierarchy, 63
 - integrable system, 62
 - vector field, 62
- branch point, 106

- canonical
 - brackets, 66
 - coordinates, 66
 - divisor, 103
 - coordinates, 66
 - line bundle, 103
- Casimir
 - decomposition, 38
 - function, 19, 65
 - level set of, 38

- Chern class, 110
- closed point, 37
- compatible
 - Poisson brackets, 25
 - integrable Hamiltonian systems, 62
- completable a.c.i. system, 131
- complete algebra, 47
- completion, 48
- complex torus, 108

- Darboux
 - coordinates, 66
 - Theorem, 66
- deformation property, 25
- degrees of freedom, 49
- dimension, 37, 49
- divisor
 - canonical, 103
 - elementary, 108
 - degree of, 99
 - group, 99
 - pole, 99
 - zero, 99
- double Lie algebra, 140
- dual Abelian variety, 110
- Garnier potential, 196
- general
 - fiber, 37
 - level set, 37
 - point, 37

- Hamiltonian, 19
 - derivation, 19
 - vector field, 19, 65

Index

- Hénon-Heiles
 - hierarchy, 233
 - potential, 230, 232, 233
- hyperelliptic
 - case, 83
 - curve, 106
 - involution, 107
- hierarchy
 - bi-Hamiltonian, 63
 - Hénon-Heiles, 233
- Hodge form, 105
- indicial equations, 136
- integrable
 - algebra, 49, 69
 - bi-Hamiltonian system, 62
 - Hamiltonian system, 49, 69
 - multi-Hamiltonian system, 62
 - vector field, 49, 69
- integral
 - closure, 47
 - curve, 68
 - first, 1
- invariant of affine Poisson variety
 - polynomial, 41
 - matrix, 41
- involutive
 - algebra, 47
 - Hamiltonian system, 47
- irreducible a.c.i. system, 132
- isogeny, 109
- Jacobian, 114
- Jacobi
 - inversion Theorem, 120
 - Mumford system, 143
 - surface, 121
 - variety, 114
- K-3 surface, 121
- Kodaira
 - Serre duality, 103
 - vanishing Theorem, 113
- Kummer
 - generalized surface, 121
 - intermediate surface, 121
 - surface, 121
 - variety, 121
- Krull dimension, 37
- Laurent solutions, 136
- Lax
 - equation, 141
 - equation with spectral parameter, 141
 - representation, 142
 - type, 141
- level set
 - general, 37
 - of the Casimirs, 38
 - of the integrable system, 50
- Lie derivative, 20
- Lie-Poisson
 - affine group, 30
 - structure, 23
 - modified structure, 25
- line bundle
 - ample, 105
 - canonical, 103
 - holomorphic, 100
 - very ample, 105
- lower balances, 136
- maximal
 - algebra of Casimirs, 39
 - spectrum, 37
- momentum map, 50

Index

- morphism
 - of affine Poisson varieties, 26
 - of integrable Hamiltonian systems, 54, 70
 - of Poisson spaces, 68
- multipliers, 109
- multi-Hamiltonian
 - integrable system, 62
 - vector field, 62
- Mumford system
 - even, 163, 179
 - odd, 161, 177
- node, 122
- Noether's formula, 113
- Painlevé analysis, 136
- parameter
 - map, 38
 - space, 38
- phase space, 49
- period
 - half, 121
 - matrix of A periods, 115
 - matrix of B periods, 115
 - i -th period, 115
 - lattice, 114
- Picard group, 100
- Poisson
 - action, 31
 - algebra, 19
 - affine brackets, 25
 - affine subvariety, 27
 - algebra, 19
 - analytic manifold, 65
 - bracket, 19, 65
 - canonical structure, 23
 - cohomology, 20
 - constant structure, 23
 - ideal, 29
 - isomorphism, 27, 68
 - manifold, 65
 - matrix, 21
 - morphism, 26, 68
 - product bracket, 30
 - reducible, 32
 - space, 65
 - standard structure, 23
 - structure, 19, 65
 - subalgebra, 31
 - trivial structure, 22
 - vector field, 20
- Poincaré
 - dual, 111
 - reducibility theorem, 109
- pseudo-differential operator
 - algebra of, 145
 - monic, 145
 - normalized, 145
 - order of, 145
- polarized Abelian variety, 108
- polarization
 - principal, 108
 - type, 108
 - type of a.c.i. system, 132
- principal balance, 136
- principally polarized Abelian variety, 108
- quasi-automorphism, 61
- ramification point, 87
- rank
 - of Poisson structure, 22, 69
 - rank decomposition, 41
- reciprocity laws, 115
- real level sets, 85
- reducible Abelian variety, 109

Index

- regular Poisson structure, 22
- Riemann
 - conditions, 108
 - constant, 120
 - Hurwitz formula, 106
 - Roch Theorem, 103, 112
 - theta divisor, 110
 - theta function, 110
- Sato Grassmannian, 145
- Schouten bracket, 20
- Schotky problem, 118
- seven-dimensional system, 181
- spectral
 - parameter, 141
 - curve, 142
- symplectic
 - basis, 115
 - manifold, 65
 - two-form, 65
 - decomposition, 67
 - foliation, 67
- super-integrable vector field, 49
- type of a.c.i. system, 132
- theta
 - curve, 122
 - function, 110
 - function with characteristics, 118
 - divisor, 110
- Toda lattice
 - generalized, 141
 - three body, 235
- trope, 122
- trivial
 - Poisson structure, 22
 - subsystem, 58
- vector field
 - bi-Hamiltonian, 62
 - Hamiltonian, 19, 65
 - integrable, 49, 69
 - KP, 152
 - linear, 131
 - multi-Hamiltonian, 62
 - Poisson, 20
 - super-integrable, 49
- virtual genus, 112
- Volterra group, 145
- Weierstrass point, 107
- weight homogeneous, 191
- Yang-Baxter equation
 - classical, 140
 - modified classical, 140