

## List of Symbols

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- $\mathbf{r}$  generic multi-index for multivariate array, page 3
- $z$  generic element of  $\mathbb{C}^d$ , page 5
- $\hat{\mathbf{r}}$  unitized vector representing direction determined by  $\mathbf{r}$ , page 6
- $\mathbf{1}$  vector with all components equal to 1, page 8
- $F$  generic meromorphic multivariate generating function, page 9
- $G$  numerator of generating function  $F$ , page 9
- $H$  denominator of generating function  $F$ , page 9
- $\mathcal{V}$  singular variety of  $F$ , zero-set of  $H$ , page 9
- $\text{contrib}(\mathbf{r})$  set of critical points contributing to coefficient asymptotics in direction  $\mathbf{r}$ , page 9
- $\Phi_z(\mathbf{r})$  formula for the contribution from the point  $z$  to the asymptotic estimate for  $a_r$ , page 9
- $\mathbb{C}[[z_1, \dots, z_d]]$  ring of formal power series in  $\mathbf{z} = (z_1, \dots, z_d)$  with complex coefficients, page 15
- $\mathbf{0}$  vector all of whose components equal 0, page 16
- $\mathbb{C}\{z_1, \dots, z_d\}$  ring of germs of analytic functions, page 16
- $\mathcal{D}$  domain of convergence of power series, page 16
- $\text{Re log } \mathcal{D}$  logarithmic domain of convergence of convergence of power series, page 16
- $\uplus$  disjoint union, page 19
- $\mathbb{P}$  probability measure, page 24
- $\mathbb{C}_{\text{alg}}[[z]]$  ring of elements of  $\mathbb{C}[[z]]$  that are algebraic over  $\mathbb{C}(z)$ , page 34
- $\mathbb{C}[z]$  ring of polynomials in  $z$  with complex coefficients, page 36
- $\mathbb{C}(z)$  field of fractions of  $\mathbb{C}[z]$ , page 36
- $\text{Res}$  complex-analytic residue (form), page 39
- $\text{Re}$  real part of a complex number, page 50
- $\text{Im}$  imaginary part of a complex number, page 50
- $\phi$  generic phase function of Fourier-Laplace integral, page 67
- $A$  generic amplitude function of Fourier-Laplace integral, page 67
- $C(k, l)$  constants defined in terms of Gamma function, appearing in Fourier-Laplace integral formulae, page 68

- $p$  principal value of  $k$ th root, page 74  
 $\mathcal{I}(\lambda)$  two-sided Fourier-Laplace integral, page 81  
 $\mathcal{I}_+(\lambda)$  one-sided univariate Fourier-Laplace integral, page 85  
 $\text{Ai}$  Airy function, page 88  
 $\mathcal{H}$  Hessian matrix of second partial derivatives, page 89  
 $\nabla$  gradient map, page 89  
 $\text{LT}$  leading term with respect to monomial order, page 107  
 $\partial_j$  the formal operator  $\partial/\partial x_j$  as an element of the Weyl algebra, page 117  
 $\text{Re log}$  coordinate-wise log modulus map, page 120  
 $\mathbf{T}_{\text{flat}}$  standard torus in  $\mathbb{R}^d$ , page 121  
 $\text{hull}$  convex hull, page 121  
 $\text{tan}_x(C)$  geometric tangent cone to  $C$  at  $x$ , page 121  
 $\text{normal}_x(C)$  outward normal cone, dual to  $\text{tan}_x(C)$ , page 122  
 $\text{hom}$  homogeneous part of power series, page 122  
 $\text{algtan}_x(f)$  algebraic tangent cone of  $f$  at  $x$ , page 122  
 $\mathcal{L}(z)$  module of formal Laurent series, page 124  
 $\text{amoeba}$  amoeba of a polynomial in the sense of Gel'fand, Kapranov, and Zelevinsky (1994), page 127  
 $\mathbf{P}$  Newton polytope, page 128  
 $\mathbf{T}(x)$  the torus (polycircle)  $\exp(x + i\mathbb{R}^d)$ , page 136  
 $\mathbf{x}_{\min}(\hat{r}_*)$  minimizing point on  $B$  for  $h$  in direction  $\hat{r}_*$ , page 138  
 $C_*$  the cycle  $C$  pushed down to the obstruction, page 140  
 $\mathcal{M}^{z,\text{loc}}$  the union of a small neighborhood of  $z$  in  $\mathcal{M}$  with  $\mathcal{M}^{h(z)-\varepsilon}$ , page 144  
 $\nabla_{\log}$  logarithmic gradient map, page 145  
 $\text{critical}(r)$  set of critical points in direction  $r$ , page 145  
 $\mathbf{K}(z)$  family of cones for points of a complex algebraic variety varying semi-continuously, page 151  
 $\mathbf{N}(z)$  the dual cone to  $\mathbf{K}(z)$ , page 151  
 $C_*(z)$  the piece of  $C_*$  quasi-local to  $z$ , page 152  
 $\text{N-data}$  normal Morse data, page 153  
 $\text{T-data}$  tangential Morse data, page 153  
 $\simeq$  is homotopic to, page 154  
 $C(z)$  cycle quasi-local to  $z$  in  $\mathcal{V}$ , whose direct product with  $\text{N-data}(z)$  yields  $C_*(z)$ , page 154  
 $\theta$  generic variable for parametrizing polycircle, page 167  
 $\text{INT}$  intersection class, page 172  
 $\text{Arg}$  Argument of a complex number, page 182  
 $\mathcal{G}$  Gauss map, page 185  
 $\mathcal{K}$  Gauss-Kronecker curvature, page 185  
 $n$  density of standard normal distribution, page 199  
 $M(\mathcal{A})$  the matroid of the hyperplane arrangement  $\mathcal{A}$ , page 213  
 $\text{CIRC}$  circuits of matroid, page 213  
 $\mathbf{R}_p$  local ring of germs of analytic functions at  $p$ , page 215

*List of Symbols*

xvii

- $\Gamma_\Psi$  augmented lognormal matrix, page 220  
BC bases of matroid with no broken circuit, page 228  
 $\Delta$  standard (embedded) simplex, page 242  
 $\mathbf{t}$  generic variable for simplex, page 242  
 $\pi\Delta$  shadow simplex, page 242  
 $S$  set of critical points for Fourier-Laplace integral, page 246  
 $\mathbf{K}^z(A)$  cone of hyperbolicity for the homogeneous polynomial  $A$ , page 257  
 $\mathbf{K}^{A,B}(\mathbf{x})$  family of cones for a homogeneous polynomial  $A$ , page 257  
 $\mathbf{K}^{f,B}(\mathbf{z})$  family of cones when  $f$  is not homogeneous, page 259  
 $A^*$  algebraic dual to the homogeneous polynomial  $A$ , page 270  
 $\delta$  coboundary map, page 332

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