List of Notation (Partial)

$\mathbb{C}$	complex numbers
$\mathbb{N}$	nonnegative integers
$\mathbb{P}$	positive integers
$\mathbb{Q}$	rational numbers
$\mathbb{R}$	real numbers
$\mathbb{R}_+$	nonnegative real numbers
$\mathbb{Z}$	integers
$\mathbb{C}^*$	$\mathbb{C} - \{0\}$
$[n]$	the set $\{1, 2, \ldots, n\}$ for $n \in \mathbb{N}$ (so $[0] = \emptyset$)
$[i, j]$	for integers $i \leq j$, the set $\{i, i+1, \ldots, j\}$ (when the context is clear, it can also be the set $\{x \in \mathbb{R} : i \leq x \leq j\}$)
δ_{ij}	the Kronecker delta, equal to 1 if $i = j$ and 0 otherwise
$:=$	equals by definition
$\dot\cup$	disjoint union
$S \subseteq T$	S is a subset of T
$S \subset T$	S is a subset of T and $S \neq T$
$\lfloor x \rfloor$	greatest integer $\leq x$
$\lceil x \rceil$	least integer $\geq x$
$\mathrm{card}\, X$, $\#X$, $\lvert X \rvert$	all used for the number of elements of the finite set X
$\{a_1, \ldots, a_k\}_<$	the set $\{a_1, \ldots, a_k\} \subset \mathbb{R}$, where $a_1 < \cdots < a_k$
2^S	the set of subsets of S
X^N	the set of all functions $f : N \to X$ (a vector space if X is a field)
$\binom{S}{k}$	the set of k-element subsets of S
$\left(\!\binom{S}{k}\!\right)$	the set of k-element multisets on S
$\binom{n}{a_1, a_2, \ldots, a_k}$	multinomial coefficient
$\binom{\boldsymbol{n}}{\boldsymbol{k}}$	q-binomial coefficient (in the variable q)
$\binom{\boldsymbol{n}}{\boldsymbol{k}}_x$	q-binomial coefficient in the variable x
$(\boldsymbol{i})$	$1 + q + \cdots + q^{i-1}$, for $i \in \mathbb{P}$

$\boldsymbol{(n)!}$	$\boldsymbol{(1)(2)\cdots(n)}$, for $n \in \mathbb{N}$
$[i]$	$1-x^i$, for $i \in \mathbb{P}$
$[n]!$	$[1][2]\cdots[n]$, for $n \in \mathbb{N}$
$\mathfrak{S}_M$	the set of permutations of the multiset M
$s(n,k)$	Stirling number of the first kind
$c(n,k)$	signless Stirling number of the first kind
$S(n,k)$	Stirling number of the second kind
$B(n)$	Bell number
$A(n,k)$	Eulerian number
$A_d(x)$	Eulerian polynomial
E_n	Euler number
C_n	Catalan number
$\mathcal{A}(w)$	set of functions $f\colon [n] \to \mathbb{N}$ that are compatible with $w \in \mathfrak{S}_n$
$\mathcal{A}_m(w)$	set of functions $f\colon [n] \to [m]$ that are compatible with $w \in \mathfrak{S}_n$
Δ	first difference operator (i.e., $\Delta f(n) = f(n+1) - f(n)$)
$\lambda \vdash n$	λ is a partition of the integer $n \geq 0$
$\mathrm{Par}(n)$	the set of all partitions of the integer $n \geq 0$
$\mathrm{Comp}(n)$	the set of all compositions of the integer $n \geq 0$
$p(n)$	number of partitions of n
$p_k(n)$	number of partitions of n into k parts
$\mathfrak{S}_n$	set (or group) of all permutations of $[n]$
$\mathrm{inv}(w)$	number of inversions of the permutation (or sequence) w
$\mathrm{maj}(w)$	major index of the permutation (or sequence) w
$\mathrm{des}(w)$	number of descents of the permutation (or sequence) w
$D(w)$	descent set of the permutation (or sequence) w
$\mathrm{exc}(w)$	number of excedances of the permutation $w \in \mathfrak{S}_n$
$\mathrm{Exc}(w)$	excedance set of the permutation $w \in \mathfrak{S}_n$
$c(w)$	number of cycles of the permutation w
$\alpha_n(S)$, $\alpha(S)$	$\#\{w \in \mathfrak{S}_n : D(w) \subseteq S\}$
$\beta_n(S), \beta(S)$	$\#\{w \in \mathfrak{S}_n : D(w) = S\}$
$\mathbb{F}_q$	a finite field (unique up to isomorphism) with q elements
$\mathbb{F}_q^*$	$\mathbb{F}_q - \{0\}$
$\mathrm{GL}(n,q)$	group of invertible linear transformations $\mathbb{F}_q^n \to \mathbb{F}_q^n$
$\mathrm{Mat}(n,q)$	algebra of $n \times n$ matrices over $\mathbb{F}_q$
$\gamma_n = \gamma_n(q)$	$\#\mathrm{GL}(n,q)$
$\mathcal{I}(q)$	set of all nonconstant monic irreducible polynomials over $\mathbb{F}_q$
$\mathrm{im}\, A$	image of the linear transformation (or function) A
$\ker A$	kernel of the linear transformation A
$\mathrm{tr}\, A$	trace of the linear transformation A

$\det(B : j,i)$	determinant of the matrix obtained from B by removing the jth row and ith column
$\mathrm{aff}(S)$	affine span of the subset S of a vector space V (i.e., all linear combinations of elements of S whose coefficients sum to 0)
$R[x]$	ring of polynomials in the indeterminate x with coefficients in the integral domain R
$R(x)$	ring of rational functions in x with coefficients in R, so $R(x)$ is the quotient field of $R[x]$ when R is a field
$R[[x]]$	ring of formal power series $\sum_{n\geq 0} a_n x^n$ in x with coefficients a_n in R
$R((x))$	ring of formal Laurent series $\sum_{n\geq n_0} a_n x^n$, for some $n_0 \in \mathbb{Z}$, in x with coefficients a_n in R, so $R((x))$ is the quotient field of $R[[x]]$ when R is a field
$\Psi_{k,j} F(x)$	(k,j) multisection of the power series $F(x)$
x^α	$x_1^{\alpha_1} \cdots x_k^{\alpha_k}$, where $\alpha = (\alpha_1,\ldots,\alpha_k)$
$[x^n]F(x)$	coefficient of x^n in the series $F(x) = \sum a_n x^n$
$F(x)^{\langle -1\rangle}$	compositional inverse of the power series $F(x) = a_1 x + a_2 x^2 + \cdots$, $a_1 \neq 0$
$f(n) \sim g(n)$	$f(n)$ and $g(n)$ are asymptotic as $n \to \infty$ (i.e., $\lim_{n\to\infty} f(n)/g(n) = 1$)
$s \parallel t$	s and t are incomparable (in a poset P)
$s \lessdot t$	t covers s (in a poset P)
P^*	dual of the poset P
$\widehat{P}$	the poset P with a $\hat{0}$ and $\hat{1}$ adjoined
$P + Q$	disjoint union of the posets P and Q
$P \times Q$	cartesian (or direct) product of the posets P and Q
$P \oplus Q$	ordinal sum of the posets P and Q
$P \otimes Q$	ordinal product of the posets P and Q
Λ_t	$\{s \in P : s \leq t\}$, where P is a poset
V_t	$\{s \in P : s \geq t\}$, where P is a poset
$\mathrm{Int}(P)$	the poset of (nonempty) intervals of the poset P
$J(P)$	lattice of order ideals of the poset P
$J_f(P)$	lattice of *finite* order ideals of the poset P
$e(P)$	number of linear extensions of the poset P
ρ	rank function of the graded poset P
$\ell(s,t)$	length of the longest chain of the interval $[s,t]$
P_S	the S-rank-selected subposet of the graded poset P (i.e., $P_S = \{t \in P : \rho(t) \in S\}$)
$\alpha_P(S)$	number of maximal chains of the rank-selected subposet P_S
$\beta_P(S)$	$\sum_{T\subseteq S} (-1)^{\#(S-T)} \alpha_P(T)$

$\mathcal{L}(P,\omega)$	set of linear extensions (regarded as permutations of the labels) of the labeled poset (P,ω) on $[p]$
$\lvert\sigma\rvert$	$\sum_{t\in X}\sigma(t)$, for a function $\sigma: X \to \mathbb{Z}$, where X is a finite set
$\mathcal{L}(P)$	the set $\mathcal{L}(P,\omega)$ when ω is natural
$\Omega_{P,\omega}(m)$	order polynomial of the labeled poset P,ω
$\Omega_P(m)$	$\Omega_{P,\omega}(m)$ when ω is natural
$\lvert\Delta\rvert$	geometric realization of the simplicial complex Δ
$\partial\Gamma$	boundary of a triangulation Γ
Γ°	interior of a triangulation Γ
$r(\mathcal{A})$	number of regions of the arrangement $\mathcal{A}$
$b(\mathcal{A})$	number of bounded regions of the arrangement $\mathcal{A}$