

Basic notation

\mathbb{N}	The natural numbers: $\{0, 1, 2, \dots\}$
\mathbb{P}	The positive integers: $\{1, 2, 3, \dots\}$
$[n]$	The set $\{1, 2, \dots, n\}$ (1/18)
\mathbb{F}_q	Finite field with q elements (1/25)
\mathfrak{S}_n	Symmetric group on n elements (1/25)
2^E	Power set of a set E (2/4)
$A \cup e, A \setminus e$	Abbreviations for $A \cup \{e\}, A \setminus \{e\}$ (2/8)

Posets and lattices

$x \succ y$	Covering relation in a poset (1/18)
$[x, y]$	Interval in a poset (1/18)
$\hat{0}, \hat{1}$	Unique minimal and maximal elements (1/18)
$F_P(q)$	Rank-generating function of a poset P (1/18)
P^*	Dual poset of P (1/18)
$x \vee y, x \wedge y$	Join and meet operations in a lattice (1/23)
$J(P)$	(Distributive) lattice of order ideals of a poset P (1/28)
$\text{Irr}(L)$	Poset of (join-)irreducibles in a lattice L (1/28)
$\langle x_1, \dots, x_n \rangle$	Order ideal generated by x_1, \dots, x_n (1/28)
\mathcal{B}_n	Boolean algebra of rank n (1/18)
Π_n	Partition lattice of order n (1/18)
Y	Young's lattice (1/23)
$L_n(q)$	Subspace lattice of \mathbb{F}_q^n (1/25)
$K(G)$	Clique poset of a graph (1/23)
M_5	Modular, nondistributive lattice with five elements (1/18)
N_5	Non-ranked lattice with five elements (1/18)
$L(S)$	Geometric lattice of linear spans of sets of vectors in S (2/1)
$L^{\text{aff}}(S)$	Geometric lattice of affine spans of sets of vectors in S (2/1)
$\text{Int}(P)$	Set of intervals of P (2/25)
$I(P)$	Incidence algebra of P (2/25)
$f * g$	Convolution product on $I(P)$ (2/25)
δ	Kronecker delta (identity in $I(P)$) (2/25)
μ	Möbius function (2/25)
$\chi(L; x)$	Characteristic polynomial of a ranked lattice L (2/27)
$A(L)$	Möbius algebra of a lattice L (2/29)
ε_x	Unit in $A(L)$ corresponding to $x \in L$ (2/29)

Matroids

$A \mapsto \bar{A}$	Matroid closure operator (2/4)
$\mathcal{B}, \mathcal{B}(M)$	Matroid basis system (of matroid M) (2/11)
$\mathcal{I}, \mathcal{B}(M)$	Matroid independence system (of matroid M) (2/11)
$\mathcal{C}, \mathcal{B}(M)$	Matroid circuit system (of matroid M) (2/11)
$L(M)$	(Geometric) lattice of flats of a matroid M (2/8)
$U_k(n)$	Uniform matroid of rank k on n elements (2/8)
$M(G)$	Graphic matroid of a graph G (2/11)
$M(S)$	Linear matroid of a set S of vectors (2/13)
M^*	Dual of a matroid (2/13)
$M_1 \oplus M_2$	Direct sum of matroids (2/15)
$M - e$	Deletion (2/15)
M/e	Contraction (2/15)
$C(e, B)$	Fundamental circuit of e with respect to basis B (2/20)
$C^*(e, B)$	Fundamental cocircuit of e with respect to basis B (2/20)
$T(M), T(M, x, y)$	The Tutte polynomial of M (2/18)

Graphs

$V(G), E(G)$	Vertex and edge sets of graph G
$G + H$	Disjoint union of graphs
K_n	Complete graph with vertex set $[n]$ (1/23)
$\overline{K_n}$	Graph with n vertices and no edges (2/20)
$\mathcal{X}_k(G)$	Proper k -colorings of G (2/20)
$\chi(G; k)$	Chromatic polynomial of G (2/20)

Hyperplane arrangements

\mathcal{B}_n	Boolean arrangement of dimension n (3/3)
Br_n	Braid arrangement of dimension n (3/3)
$L(\mathcal{A})$	Intersection poset of an arrangement \mathcal{A} (3/3)
$\text{ess}(\mathcal{A})$	Essentialization of an arrangement \mathcal{A} (3/3)
$r(\mathcal{A})$	Number of regions of \mathcal{A} (3/5)
$b(\mathcal{A})$	Number of relatively bounded regions of \mathcal{A} (3/5)
\mathcal{A}_x	Deletion of all hyperplanes not containing x (3/5)
\mathcal{A}^x	Restriction of \mathcal{A} to x (3/5)
$\text{proj}(\mathcal{A})$	Projectivization of \mathcal{A} (3/10)
$c\mathcal{A}$	Cone over \mathcal{A} (3/10)
\mathcal{A}_G	Graphic arrangement of a graph G (3/10)
$\mathcal{F}(\mathcal{A})$	Set of faces of an arrangement \mathcal{A} (3/24)
$\hat{\mathcal{F}}(\mathcal{A})$	Big face lattice of \mathcal{A} (3/24)

Representation theory

$\mathbb{F}G$	Group algebra of G over \mathbb{F} (4/7)
χ_ρ	Character of a representation ρ (4/9)
$\chi_{\text{triv}}, \rho_{\text{triv}}$	Trivial repn/character of a group (4/7)
$\chi_{\text{sign}}, \rho_{\text{sign}}$	Sign (or alternating) repn/character of \mathfrak{S}_n (4/7)
$\chi_{\text{reg}}, \rho_{\text{reg}}$	Regular repn/character of a group (4/7)
$\chi_{\text{def}}, \rho_{\text{def}}$	Defining repn/character of \mathfrak{S}_n (4/7)
$C\ell(G)$	Vector space of class functions on a group G (4/9)
$\langle \cdot, \cdot \rangle_G$	Inner product on $C\ell(G)$ (4/9)
ρ^*	Dual (contragredient) representation of ρ (4/11)
$[G, G]$	Commutator subgroup of G (4/16)
G^{ab}	Abelianization of G (4/16)
$Ch(G)$	Group of 1-dimensional characters of G (4/16)
$\lambda \vdash n$	Indicates that λ is a partition of n (4/18)
C_μ	Conjugacy class in \mathfrak{S}_n of all permutations of cycle shape μ (4/18)
$\lambda < \mu$	Lexicographic order on partitions (4/18)
ρ_λ	Permutation representation of \mathfrak{S}_n on tabloids of shape λ (4/18)
$\chi_{\lambda, \mu}$	Character of ρ_λ on C_μ (4/18)
$\text{Res}_H^G \rho$	Restriction of the representation ρ from G to H (4/21)
$\text{Ind}_H^G \rho$	Induced representation ρ on G (4/21)

Symmetric functions

m_λ	Monomial symmetric function indexed by λ (4/23)
e_λ	Elementary symmetric function indexed by λ (4/23)
h_λ	Complete homogeneous symmetric function indexed by λ (4/23)
p_λ	Power-sum symmetric function indexed by λ (4/25)
s_λ	Schur symmetric function indexed by λ (4/25)
$\Lambda_n, \Lambda_{R,n}$	Degree- n symmetric functions [with coefficients in R] (4/23)
Λ, Λ_R	Ring of all symmetric functions [with coefficients in R] (4/23)
$CST(\lambda)$	Set of column-strict tableaux of shape λ (4/25)
$SYT(\lambda)$	Set of standard (Young) tableaux of shape λ (4/30)
f^λ	Number of standard tableaux of shape λ (4/30)
$K_{\lambda\mu}$	Kostka numbers (4/25)
$\lambda \triangleleft \mu$	Dominance partial order on partitions (4/25)