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Glossary of functions

S and T denote disjoint vertex subsets of a graph G.

$$\begin{aligned}
\delta(S,T) &= \sum_{x\in S} f(x) + \sum_{x\in T}\big(\deg_G(x) - f(x)\big) - e_G(S,T) - q(S,T) \\
&= \sum_{x\in S} f(x) + \sum_{x\in T}\big(\deg_{G-S}(x) - f(x)\big) - q(S,T),
\end{aligned}$$

where $q(S,T)$ denotes the number of components C of $G-(S\cup T)$ such that $\sum_{x\in V(C)} f(x) + e_G(C,T) \equiv 1 \pmod 2$.

$$\begin{aligned}
\delta^*(S,T) &= \sum_{x\in S} f(x) + \sum_{x\in T}\big(\deg_G(x) - f(x)\big) - e_G(S,T) \\
&= \sum_{x\in S} f(x) + \sum_{x\in T}\big(\deg_{G-S}(x) - f(x)\big)
\end{aligned}$$

$$\begin{aligned}
\gamma(S,T) &= \sum_{x\in S} f(x) + \sum_{x\in T}(\deg_G(x) - g(x)) - e_G(S,T) - q^*(S,T) \\
&= \sum_{x\in S} f(x) + \sum_{x\in T}(\deg_{G-S}(x) - g(x)) - q^*(S,T),
\end{aligned}$$

where $q^*(S,T)$ denotes the number of components C of $G-(S\cup T)$ such that $g(x)=f(x)$ for all $x\in V(C)$ and $\sum_{x\in V(C)} f(x) + e_G(C,T) \equiv 1 \pmod 2$.

$$\begin{aligned}
\gamma^*(S,T) &= \sum_{x\in S} f(x) + \sum_{x\in T}(\deg_G(x) - g(x)) - e_G(S,T) \\
&= \sum_{x\in S} f(x) + \sum_{x\in T}(\deg_{G-S}(x) - g(x))
\end{aligned}$$

$\sum_{x\in V(C)} f(x) + e_G(C,T) \equiv 1 \pmod 2$.

$$\eta(S,T) = \sum_{x\in S} f(x) + \sum_{x\in T}(\deg_G(x) - g(x)) - e_G(S,T) - q(S,T),$$

where $q(S,T)$ denotes the number of components C of $G-(S\cup T)$ such that $\sum_{x\in V(C)} f(x) + e_G(C,T) \equiv 1 \pmod 2$.

Glossary of notation

G denotes a graph.

$X \subseteq Y$	X is a subset of Y.
$X \subset Y$	X is a proper subset of Y.
$X - Y$	$X \setminus Y$, where $Y \subseteq X$.
$X - a$	$X - \{a\}$, where $a \in X$.
$X + Y$	$X \cup Y$, where $X \cap Y = \emptyset$.
$X \triangle Y$	$(X \cup Y) - (X \cap Y)$.
$\|X\|, \#X$	The cardinality of X.
$V(G)$	The set of vertices of G.
$E(G)$	The set of edges of G.
$\|G\|$	The order of $G = \|V(G)\|$.
$\|\|G\|\|$	The size of $G = \|E(G)\|$.
$\deg_G(v)$	The degree of a vertex v in G.
$n_j(G)$	The number of vertices of G with degree j.
$N_G(v)$	The neighborhood of v.
$N_G[v]$	The closed neighborhood of $v = N_G(v) \cup \{v\}$.
$N_G(S)$	$\bigcup_{x \in S} N_G(x)$.
$E_G(X, Y)$	The set of edges of G joining X to Y.
$e_G(X, Y)$	The number of edges of G joining X to Y.
$\Delta(G)$	The maximum degree of G.
$\delta(G)$	The minimum degree of G.
$\omega(G)$	The number of components of G.
$odd(G)$	The number of odd components of G.
$Odd(G)$	The set of odd components of G.
$iso(G)$	The number of isolated vertices of G.
$Iso(G)$	The set of isolated vertices of G.
$\kappa(G)$	The connectivity of G.
$\lambda(G)$	The edge connectivity of G.
$\alpha(G)$	The independence number of G.
$\alpha'(G)$	The edge independence number of G.
$\sigma_k(G)$	$\min\{\sum_{x \in I} \deg_G(x) : I$ are independent sets of size $k\}$.
$bind(G)$	The binding number of G.
$tough(G)$	The toughness of G.
$K_n = K(n)$	The complete graph of order n.
$K_{n,m} = K(n, m)$	The complete bipartite graph of order $n + m$.
P_n	The path of order n.
C_n	The cycle of order n.
$\mathbb{Z}$	The set of integers.
$\mathbb{Z}^+$	The set of non-negative integers $= \{0, 1, 2, \ldots\}$.

Index

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Springer

Edited by J.-M. Morel, F. Takens, B. Teissier, P.K. Maini

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