Generalized matching preclusion for bipartite dual-cube-like networks

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Let H be a bipartite graph with bipartition (V_1, V_2) such that $|V_1| = |V_2|$. Then H has a perfect matching if and only if $|W| \leq |N_H(W)|$ for each $W \subseteq V_1$. From this, we call W a $(|W|, |N_H(W)|)$-obstruction set if $|W| > |N_G(W)|$. Let F be a set of edges of G such that $G - F$ has no perfect matchings. It is known that if $G - F$ has an (a, b)-obstruction set with $a > b$, then there exists $F' \subseteq F$ such that $G - F'$ has a $(b + 1, b)$-obstruction set. Therefore, we call F a *matching preclusion set of order* a if $G - F$ has no perfect matchings and additionally does not have a $(b, b - 1)$-obstruction set for any $b < a$. The *matching preclusion problem of order* a is the problem of finding the smallest matching preclusion set of order a. In this talk, we discuss this generalized matching preclusion problem for bipartite dual-cube-like networks.

Keywords: matching, interconnection networks