Independent Sets of Cliques in Graphs

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A vertex set S of a graph G is an indeque set if the induced subgraph $G[S]$ is a disjoint union of independent cliques. The indeque number $\alpha\omega(G)$ of G is the maximum size of an indeque set of G. We prove a conjecture of Biro, Collado, and Zamora that for any series–parallel graph (partial 2-tree) G, $\alpha\omega(G) \geq \frac{1}{2}n(G)$. We also disprove a conjecture of Biro et al about triangular grids by reinterpreting it as a tiling problem. We prove an upper bound on the indeque number for regular graphs. We introduce a variation of the chromatic number, and use it to prove $\alpha\omega(G) \geq \frac{1}{2}n(G)$ for any cubic graph G.

Keywords: indeque set, indeque number, 2-tree, triangular grid, tiling