ATTACKING A TRANSVERSAL BOUND CONJECTURE WITH THE INDEPENDENCE NUMBER OF A GRAPH

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We shrink the gap between the current best bound and the elusive conjecture of Tuza and Vestergaard [Discussiones Math. Graph Theory 22 (2002), 199–210] that if $H$ is a 3-regular 6-uniform hypergraph of order $n$, then $\tau(H) \leq n/4$. We do this, unexpectedly, via the independence number of a graph. In particular, we strengthen a result of Fajtlowicz [Combinatorica 4 (1984), 35–38] on the independence number of a graph given its maximum degree and maximum clique size. This leads to a bound on the independence number and transversal number of 6-uniform hypergraphs with maximum degree three. We possibly present a weighting argument as well.

Keywords: Independence, Clique, Transversal.

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References
