The Upper Transversal Number of Uniform Hypergraphs

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The *upper transversal number* of a hypergraph is the maximum size of a minimal *transversal*, also known as a *vertex cover* or *hitting set*. Minimal transversals of hypergraphs have been intensely studied in the contexts of computational complexity and data mining. We show that for $k \geq 4$, the upper transversal number of a k-uniform hypergraph of order n is bounded below by $\sqrt[k]{n}$, for sufficiently large n. This settles a conjecture of Henning and Yeo in all but finitely many cases for each fixed k. We also construct a k-uniform hypergraph of order n such that the upper transversal number is at most $2k\sqrt[k]{n}$, thus showing that the lower bound is tight up to a linear factor in k.

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