The intersection spectrum of 3-chromatic intersecting hypergraphs

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The intersection spectrum of a hypergraph is the set of all intersection sizes of pairs of edges. In their seminal paper from 1973 which introduced the local lemma, Erdős and Lovász asked: how large must the intersection spectrum of a k-uniform 3-chromatic intersecting hypergraph be? They showed that such a hypergraph must have at least three intersection sizes, and conjectured that the size of the intersection spectrum tends to infinity with k. We prove this conjecture in a strong form, by showing that there are at least $k^{1/2-o(1)}$ intersection sizes. Joint work with Matija Bucić and Benny Sudakov.