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Hyperplane Arrangements with Large Average Diameter

The largest possible average diameter of a bounded cell of a simple hyperplane arrangement is conjectured to be not greater than the dimension. We prove that this conjecture holds in dimension 2, and is asymptotically tight in fixed dimension. We give the exact value of the largest possible average diameter for all simple arrangements in dimension 2, for arrangements having at most the dimension plus 2 hyperplanes, and for arrangements having 6 hyperplanes in dimension 3. In dimension 3, we give lower and upper bounds which are both asymptotically equal to the dimension. Joint work with Feng Xie, McMaster University.