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On Extensions of Cyclic Arrangements

The average diameter of a bounded cell of a simple arrangement is conjectured to be not greater than the dimension. This conjecture relates to the average case performance of the simplex method of linear programming. Preliminary results indicate that the arrangements maximizing the average diameter are obtained by adding to the cyclic arrangements one hyperplane with the vertices of the cyclic arrangement on the same side of the added hyperplane. The combinatorics of the addition of a pseudo-hyperplane to the cyclic arrangement are well-studied and correspond to higher Bruhat orders. In this talk, we present a computational framework to investigate these special extensions of the cyclic arrangement, and some preliminary results.