

Lopsided coamoebas

The coamoeba of an algebraic hypersurface $V(f) \subset (\mathbb{C}^*)^n$ is defined as its image under the componentwise argument mapping. One of the main problems regarding coamoebas is to determine the maximal number of connected complement components, given either a fixed point configuration $A = \text{supp}(f)$ or a fixed Newton polytope $\Delta_f = \text{Conv}(A)$. The progress so far consists of an upper bound given by the weightened volume $n! \text{Vol}(\Delta_f)$. In this talk we will introduce the lopsided coamoeba. This is a simpler object than the coamoeba, and in general it has fewer complement components. We will show that there is a relation between its complement components and a certain translated lattice inside the zonotope of a Gale transform of A . In some cases this allows us to construct coamoebas with the maximal number of complement components. Focusing on the exceptional cases, we find some interesting examples of coamoebas.