1084-14-104 **Mounir Nisse*** (nisse@math.tamu.edu), Department of Mathematics, College Station, TX 77843, and **Frank Sottile** (sottile@math.tamu.edu), Department of Mathematics College Station, TX 77843. *On the number of complement components of hypersurface coamoebas.* Preliminary report.

The coamoeba $co\mathcal{A}(V)$ of an algebraic variety $V \subset (\mathbb{C}^*)^n$ is its image under the argument map. The phase limit set of V, $\mathcal{P}^\infty(V)$, is the set of accumulation points of arguments of sequences in V with unbounded logarithm. The shell $\mathcal{H}(V)$ of a hypersurface coamoeba is the subset of $\mathcal{P}^\infty(V)$ bounded by the $(n-1)$-tori dual to the edges of the Newton polytope Δ of a polynomial defining the hypersurface. If $n > 2$, we show some inequalities between the number of connected components of $(S^1)^n \setminus \overline{co\mathcal{A}(V)}$, $(S^1)^n \setminus \mathcal{P}^\infty(V)$, and $(S^1)^n \setminus \mathcal{H}(V)$ to obtain the following:

$$\sharp\{(S^1)^n \setminus \overline{co\mathcal{A}(V)}\} \leq \sharp\{(S^1)^n \setminus \mathcal{P}^\infty(V)\} \leq \sharp\{(S^1)^n \setminus \mathcal{H}(V)\} \leq n!Vol(\Delta).$$

Moreover, we give an example of an integer polygon $\Delta_0 \subset \mathbb{R}^2$ where the last inequality is never sharp for any complex plane curve with such Newton polygon. Also, we have other examples of higher dimension where the inequality is not sharp. (Received August 26, 2012)