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Frank Sottile* (sottile@math.tamu.edu), Department of Mathematics, Texas A&M University, College Station, TX 77843, and **Mikael Passare**. *Discriminant Coamoebas in Dimension 2 via Homology*.

Coamoebas of reduced A -discriminants arise when studying the convergence of Mellin-Barnes integrals for the solutions to the associated A -hypergeometric system. Nilsson and Passare described these coamoebas, in dimension 2, as topological chains in the 2-torus T^2 with piecewise-linear boundary. This boundary, with opposite orientation, is the boundary of a natural centrally symmetric zonotope in T^2 , and they showed that the union of these two chains is a cycle equal to $\text{vol}(A) \cdot [T^2]$, i.e., it covers T^2 $\text{vol}(A)$ -many times. Their proof could not be generalized to higher dimensions, and it gave no intuition about the multiplicity.

In this talk, which is joint work with Passare, we give a new, simpler, and elementary proof of these facts which identifies the multiplicity from the pushforward of a homology cycle in a torus T^A to T^2 . The ingredients of this proof generalize to all dimensions, giving hope for a complete understanding of A -discriminant coamoebas. (Received August 30, 2011)