1024-05-50   **John R Stembridge*** (`jrs@umich.edu`), Dept. of Mathematics, University of Michigan, Ann Arbor, MI 48109-1043. *Irreducible circuits and Coxeter arrangements.*

In this talk, we will introduce the concept of irreducible circuits. In a vector arrangement Φ, these are configurations consisting of one vector $\alpha \in \Phi$ in the positive linear span of an independent set $\Delta \subset \Phi$ such that no proper subset of Δ has any member of $\Phi \setminus \Delta$ in its positive linear span. It is not hard to show that the oriented matroid of any centrally symmetric vector arrangement is constructively determined by its irreducible circuits, and in many cases of interest, the irreducible circuits are exponentially smaller than the full oriented matroid. As an illustration of this, we will describe the classification of irreducible circuits in root systems. In the simply-laced case, this turns out to be related to the classification of graphs whose eigenvalues are ≥ -2. (Received December 14, 2006)