1106-52-1563 **Jim Lawrence*** (lawrence@gmu.edu), Department of Mathematical Sciences, 4400 University Drive, George Mason University, Fairfax, VA 22030-4444. *A Number associated with a Hyperplane Arrangement in R^d or a Graph.*

The complement in R^d of an arrangement of hyperplanes is the union of pairwise disjoint pieces, each of which is an open convex polyhedron. These form the vertices of a graph, with two pieces being adjacent provided that the polyhedra share a $(d-1)$-dimensional border. This graph is bipartite. Upon coloring the pieces Red or Blue in such a way that no two adjacent regions have the same color, we may find the (absolute) difference between the number of red and the number of blue pieces. This number, called the *odd-even invariant* of the arrangement, has interesting properties, some of which will be described in this talk. From a graph with n vertices and m edges, it is possible to obtain an arrangement of m hyperplanes in R^{n-1} (in a standard and well-known way). The number above can be obtained, yielding a graphical invariant, closely related to the number of acyclic orientations of the graph. In the graphical case, the invariant has additional properties, some of which we present. There is an *odd-even chromatic polynomial*, which in a way generalizes the ordinary chromatic polynomial. (Received September 14, 2014)