Björner, Anders; **Ziegler, Günter M.**
Combinatorial stratification of complex arrangements. (English) Zbl 0754.52003
J. Am. Math. Soc. 5, No. 1, 105-149 (1992).

An arrangement of complex hyperplanes of $\mathbb{C}^d$ through the origin is encoded by certain combinatorial data in terms of complex signs, posets, matroids, and stratifications. The topology of such an arrangement and its complement is studied, in particular for its link in the sphere S^{2d-1}. Somehow, this corresponds to results by J. Milnor and E. Brieskorn on complex singularities. Especially it is shown that for $d \geq 4$ the link of an arrangement has the homotopy type of a wedge of spheres. Alexander duality provides a relation for the homology and cohomology. Finally, an outline is given for more general types of arrangements.

Reviewer: W.Kühnel (Duisburg)

MSC:

52C35	Arrangements of points, flats, hyperplanes (aspects of discrete geometry)
57N80	Stratifications in topological manifolds
05B35	Combinatorial aspects of matroids and geometric lattices
32S60	Stratifications; constructible sheaves; intersection cohomology (complex-analytic aspects)

Keywords:

oriented matroid; matroid stratification; regular cell complex; pseudo- arrangement

Full Text: DOI