

1017-52-55

**stefan o tohaneanu\*** (tohanean@math.tamu.edu), 3900 Old College Rd. #28, Bryan, TX 77801.

*Topological Criteria for  $k$ -Formal Arrangements.*

We prove a criterion for  $k$ -formality of arrangements, using a complex constructed from vector spaces introduced in [K.A. Brandt and H. Terao, *Free Arrangements and Relation Spaces*, Discrete Comput. Geom. **12**(1994), 49-63]. As an application, we give a simple description of  $k$ -formality of graphic arrangements: Let  $G$  be a connected graph with no loops or multiple edges. Let  $\Delta$  be the flag (clique) complex of  $G$  and let  $H_\bullet(\Delta)$  be the homology of the chain complex of  $\Delta$ . If  $\mathcal{A}_G$  is the graphic arrangement associated to  $G$ , we will show that  $\mathcal{A}_G$  is  $k$ -formal if and only if  $H_i(\Delta) = 0$  for every  $i = 1, \dots, k - 1$ . (Received February 08, 2006)