MINIMAL CW MODELS FOR COMPLEMENTS OF 2-ARRANGEMENTS

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Abstract. A model for a topological space is a CW complex homotopy equivalent to it. In the best case, such models are chosen to be minimal, that is, they are chosen such that the number of i-cells of the model equals the i-th rational Betti number of the space. Unfortunately, not all spaces admit minimal models. In my talk, I will investigate the question whether complements of certain subspace arrangements admit minimal models. Previous work of Hattori, Dimca-Papadima, Randell and others answered this question positively for complex hyperplane arrangements. I will demonstrate a generalization of their results to the class of 2-arrangements introduced by Goresky and MacPherson. The main idea is to establish a Lefschetz-type hyperplane theorem for complements of 2-arrangements using discrete Morse theory of Forman and the theory of combinatorial stratifications of Björner and Ziegler.