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Cell structures on arrangement complements and Milnor fibers

We use Morse theoretic results of Le and Hamm to show that the Milnor fiber associated to an arrangement has a canonical cell structure compatible with the monodromy. This cell structure passes down to the complement of the associated affine arrangement and thence to the central arrangement. For the arrangement complements the structure is minimal (the number of k -cells equals the k -th betti number.) Following work of Papadima-Suciu this has implications for the homotopy theory of these spaces. This talk will explain this structure and explore the implications for homology of the Milnor fiber and the homotopy theory of the complements. Some description of attaching maps for these cells will be given.