

Alexander duality for monomial ideals and their resolutions

The notion of Alexander duality is generalized here to arbitrary monomial ideals. It is shown how this duality is naturally expressed by Bass numbers, in their relations to the Betti numbers of a monomial ideal and its Alexander dual. Relative cohomological constructions on cellular complexes are shown to relate cellular free resolutions of a monomial ideal to free resolutions of its Alexander dual ideal. As an application, a new canonical resolution for monomial ideals is constructed.