

Local cohomology and stratification

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I will outline a method to automatically discover the canonical (or, coarsest possible) stratification of a given cell complex into cohomology manifolds, each of which is a union of cells. The construction proceeds by iteratively localizing the poset of cells about a family of subposets; these subposets are in turn determined by a collection of cosheaves which capture variations in local cohomology across cells in the underlying complex. The result is a finite sequence of categories whose colimit recovers the canonical strata (and hence, identifies all the topological singularities) of our complex via isomorphism classes of its objects. The entire process is amenable to efficient distributed computation.