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A method for integral cohomology of posets

We present a method to compute integral cohomology of posets. This toolbox is applicable as soon as the sub-posets under each object possess certain structure. This is the case for simplicial complexes and simplex-like posets. The method is based on homological algebra arguments in the category of functors and on a spectral sequence built upon the poset. We show its relation to discrete Morse theory and we use it to give an alternative proof of Webb’s conjecture for saturated fusion systems.

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