

## **Vanishing theorems for highly connected lattices and the subadditivity problem**

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I will discuss the interplay between cohomological and combinatorial notions of connectivity in atomic lattices, focusing on vanishing theorems for the cohomology of combinatorially highly connected lattices. This provides an interesting topological approach to the study of free resolutions of homogeneous ideals. As a particular application, I will outline a solution to the subadditivity problem concerning the shape of the minimal free resolution.