

Whitney duals of partially ordered sets

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Abstract

To each graded poset one can associate two sequences of numbers; the Whitney numbers of the first kind and the Whitney numbers of the second kind. One sequence keeps track of the Möbius function at each rank level and other keeps track of the number of elements at each rank level. We say that P and Q are Whitney duals if the Whitney numbers of the first kind of P are the Whitney numbers of the second kind of Q and vice-versa. In this talk, we will discuss a method to construct Whitney duals. This method uses a new type of edge labeling as well as quotient posets. For posets which have this type of labeling, one can construct a simplicial complex whose f -vector encodes the Whitney numbers of the second kind of the poset. Time permitting, we will discuss this complex. This is joint work with Rafael S. González D'León.