

Union of schemes: homological dimension and a structure theorem

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Abstract

In this talk we investigate the homological dimension of schemes $X \cup Y$ in terms of the homological dimensions of X and Y , when these are 2-codimensional aCM schemes. Moreover, we apply our results for computing the homological dimension of some special schemes, the standard \mathcal{S} -scheme (suitable union of linear varieties). Finally, for aCM schemes $X \cup Y$ with X and Y complete intersection schemes of codimension 2, we produce a structure theorem (Hilbert-Burch style) and we use this for computing Hilbert function and graded Betti numbers of such schemes.

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