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Mathematics > Commutative Algebra

On the Chern number of I-admissible filtrations of ideals

Mousumi Mandal, J. K. Verma

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Let I be an $\m$-primary ideal of a Noetherian local ring $(R, \m)$ of positive dimension. The coefficient $e_1(\mathcal I)$ of the Hilbert polynomial of an I-admissible filtration $\mathcal I$ is called the Chern number of $\mathcal I$. A formula for the Chern number has been derived involving Euler characteristic of subcomplexes of a Koszul complex. Specific formulas for the Chern number have been given in local rings of dimension at most two. These have been used to provide new and unified proofs of several results about $e_1(\mathcal I)$.

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