Summary: Let $A$ be a regular ring containing a field of characteristic zero and let $R = A[X_1, \ldots, X_m]$. Consider $R$ as standard graded with $\deg A = 0$ and $\deg X_i = 1$ for all $i$. In this paper we present a comprehensive study of graded components of local cohomology $H^i_I(R)$ where $I$ is an arbitrary homogeneous ideal in $R$. Our study seems to be the first in this regard.

MSC:
- 13D45 Local cohomology and commutative rings
- 14B15 Local cohomology and algebraic geometry
- 13N10 Commutative rings of differential operators and their modules
- 32C36 Local cohomology of analytic spaces

Keywords: local cohomology; graded local cohomology; ring of differential operators; Weyl algebra; de Rham (and Koszul)

Full Text: DOI

References:
[16] Puthenpurakal, T.J; Reddy, RBT, On a relation between de Rham cohomology of $H^1_I(R)$ and the Koszul cohomology of $(\partial(f))$ in $\langle (f) \rangle$, Indian J. Pure Appl. Math., 49, 1, 7-86 (2018) · Zbl 1401.14116 · doi:10.1007/s13226-018-0253-2

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