

ADMISSIBLE LOCAL SYSTEMS FOR A CLASS OF LINE ARRANGEMENTS

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ABSTRACT. A rank one local system \mathcal{L} on a smooth complex algebraic variety M is admissible roughly speaking if the dimension of the cohomology groups $H^m(M, \mathcal{L})$ can be computed directly from the cohomology algebra $H^*(M, \mathbb{C})$.

We say that a line arrangement \mathcal{A} is of type \mathcal{C}_k for some $k \geq 0$ if k is the minimal number of lines in \mathcal{A} containing all the points of multiplicity at least 3. We show that if \mathcal{A} is a line arrangement in the classes \mathcal{C}_k for $k \leq 2$, then any rank one local system \mathcal{L} on the line arrangement complement M is admissible. Partial results are obtained for the class \mathcal{C}_3 .

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