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VARIATION OF MIXED HODGE STRUCTURE ARISING FROM FAMILY OF LOGARITHMIC DEFORMATIONS II: CLASSIFYING SPACE

SAMPEI USUI

Contents

Introduction. This article is a continuation of [U.3].

Between the present article and [U.3], substantial progress has been made: the infinitesimal Torelli theorem for complements of "sufficiently ample" smooth divisors has been proved by Griffiths ([G.3]). We present here its precise statement for the reader's convenience.

Let X be a smooth, projective variety over $\mathbf{C}$ of dimension $= n$, and Y a smooth divisor on X. Denote $O_X(1) = O_X(Y)$, and by Σ the sheaf of first order differential operators on $O_X(1)$. Denote also by Δ the diagonal in $X \times X$, by $\mathscr{I}_\Delta$ its ideal, by $p_i : \Delta \to X$ the i-th projection $(i = 1,2)$, and by $\omega_{X \times X}$ the canonical invertible sheaf on $X \times X$.

(0.1) (Griffiths [G.3]). *With the above notation, if*

$$H^q\left(\left(\bigwedge^{q+1} \Sigma\right) \otimes O_X(-q)\right) = 0 \qquad (1 \leqslant q \leqslant n-1) \quad \textit{and}$$

$$H^1(\mathscr{I}_\Delta \otimes \omega_{X\times X} \otimes p_1^* O_X(1) \otimes p_2^* O_X(n-1)) = 0,$$

then the map

$$H^1(T_X(-\log Y)) \to \mathrm{Hom}\left(H^0(\Omega_X^n(\log Y)), H^1(\Omega_Y^{n-2})\right)$$

induced by contraction and the Poincaré residue is injective.

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