meromorphic p-forms consisting of those having poles only on D. 「For $\mathcal{M}$, see P36 」

We let

$$\Omega^p(*) = \bigcup_{D \in \mathrm{Div}(M)} \Omega^p(*D)$$

be the subsheaf of $\mathcal{M}^p$ of meromorphic p-forms whose polar loci are a part of a global divisor on M. Clearly

$$\Omega(*) : \Omega^0(*) \xrightarrow{d} \Omega^1(*) \longrightarrow \cdots \xrightarrow{d} \Omega^n(*)$$

gives a complex of sheaves, and as usual $\mathcal{H}^p(\Omega(*))$ denotes the pth cohomology sheaf.

「 $$\mathcal{H}^p(\Omega(*))_x = \lim_{U \ni x} \frac{\mathrm{Ker}\{d : \Omega^p(*)(U) \longrightarrow \Omega^{p+1}(*)(U)\}}{d\,\Omega^{p-1}(*)(U)}.$$ 」

Evidently

$$\mathcal{H}^0(\Omega(*)) \cong \mathbb{C},$$

and we shall prove the

Lemma. $\mathcal{H}^1(\Omega(*)) \cong \bigoplus_{D \in \mathrm{Div}(M)} \mathbb{C}_D$, where $\mathbb{C}_D$ is the constant sheaf concentrated on divisor D.

「 $$\mathcal{H}^0(\Omega(*))_x = \lim_{U \ni x} \mathrm{Ker}\{d : \Omega^0(*)(U) \longrightarrow \Omega^1(*)(U)\}$$

$\Rightarrow$ $d\sigma = 0$ for $\sigma \in \Omega^0(*)(U)$ $\Rightarrow$ σ is constant.

$\Rightarrow$ $\mathrm{Ker}\{d : \Omega^0(*)(U) \to \Omega^1(*)(U)\} \cong \mathbb{C}$

$\Rightarrow$ $\mathcal{H}^0(\Omega(*))_x \cong \mathbb{C}$ $\Rightarrow$ $\mathcal{H}^0(\Omega(*)) \cong \mathbb{C}$ 」