$$\begin{cases} \Omega^*(\log D)_p = \Omega^*(*D)_p = \Omega^*_p. \\ \mathcal{A}^*(*D)_p = \mathcal{A}^*_p. \end{cases}$$

and the result follows from the usual holomorphic and C^∞ Poincare lemmas, respectively.

「 Since D is closed in M, $\exists$ a nbd U of p s.t $U \cap D = \phi$. $\Rightarrow$ $\Omega^*(\log D)(U)$ is the set of holomorphic forms on U.

$$\Rightarrow \Omega^*(\log D)_p = \lim_{U' \ni p} \Omega^*(\log D)(U')$$

$$= \lim_{U' \ni p} \Omega^*(*D)(U') = \lim_{U' \ni p} \Omega^*(U') = \Omega^*_p$$

$$\overset{\shortparallel}{\Omega^*(*D)_p}.$$

By the same reason, $\mathcal{A}^*(*D)_p = \lim\limits_{U' \ni p} A^*(U' - U' \cap D)$

$$= \lim_{U' \ni p,\ U' \cap D = \phi} A^*(U') = \mathcal{A}^*_p.$$

$$0 \longrightarrow \mathbb{C} \longrightarrow \mathcal{A}^0 \xrightarrow{d} \mathcal{A}^1 \xrightarrow{d} \mathcal{A}^2 \xrightarrow{d} \mathcal{A}^3 \rightarrow \cdots$$

$\Rightarrow$ By the Poincare lemma (the ordinary Poincare lemma for the complex differential forms),

$$\mathcal{H}^q(\mathcal{A}^*)_p = 0 \quad q > 0, \qquad \mathcal{H}^0(\mathcal{A}^*)_p = \mathbb{C}$$

$$0 \longrightarrow \mathbb{C} \longrightarrow \Omega^0 \xrightarrow{d} \Omega^1 \xrightarrow{d} \Omega^2 \xrightarrow{d} \Omega^3 \longrightarrow$$

$\Rightarrow$ By the holomorphic Poincare lemma (P448. the example 3), $\mathcal{H}^q(\Omega^*)_p = 0$, $q > 0$, $\mathcal{H}^0(\Omega^*)_p = \mathbb{C}$.