

This is the place we have to adjust.

By the Kodaira,  $H^1(S, \Omega^1(2p)) = 0 \Rightarrow$

$$0 \rightarrow \Omega^1(2p) \rightarrow \Omega^1(3p) \rightarrow \mathbb{C}_p \rightarrow 0.$$

$\Rightarrow \exists$  a meromorphic form on  $S$ , holomorphic on  $S - \{p\}$ , and having a triple pole at  $p$ ; this can not have any residues.  $\Rightarrow$  Let  $z_1, z_2$  be local coordinates at  $p$  &  $q$ .  $\Rightarrow$  For any  $a_1, a_2$ ,  $\exists$  a meromorphic 1-form  $\eta_a$  on  $S$ , holomorphic on  $S - \{p, q\}$  and having principal part

$$\eta_a(z) = (a_1 z_1^{-3} + [0]) dz_1 + (a_2 z_2^{-2} + [0]) dz_2.$$

Then by Kodaira vanishing theorem, for  $p \in S, q \in S$

$$H^1(S, \Omega^1(2p)) = 0 = H^1(S, \Omega^1(q)) = H^1(S, \Omega^1(p)) = 0$$

and so from the exact sequences  $0 \rightarrow \Omega^1(p) \rightarrow \Omega^1(2p) \rightarrow \mathbb{C}_p \rightarrow 0$

$$0 \rightarrow \Omega^1(2p) \rightarrow \Omega^1(3p) \rightarrow \mathbb{C}_p \rightarrow 0$$

$$0 \rightarrow \Omega^1(q) \rightarrow \Omega^1(2q) \rightarrow \mathbb{C}_q \rightarrow 0.$$

we see that  $\exists$  a meromorphic form on  $S$ , holomorphic on  $S - \{p\}$  and having a triple pole at  $p$ , &  $\exists$  a meromorphic form on  $S$ , holomorphic on  $S - \{q\}$  and having a double pole at  $q$ , clearly these forms can not have any residues, since  $\frac{\sigma}{S_0}$  is the form of these forms, where  $(S_0 = 0) = 3p$  or  $2q$ .  $\sigma(p) \neq 0$  or  $\sigma(q) \neq 0$ .

It follows that if we let  $z_1$  be a local coordinate around the point  $p$  and let  $z_2$  be a local coordinate around  $q$ , for any sequence  $a_1, a_2, a_3$  of complex numbers,  $\exists$  a meromorphic 1-form  $\eta_a$  on  $S$ , holomorphic on  $S - \{p, q\}$  and having principal parts

$$\eta_a(z) = (a_1 z_1^{-3} + [0]) dz_1$$

$$= (a_3 z_2^{-2} + [0]) dz_2$$

$$= \otimes (\otimes_{2 \in \mathbb{Z}} [0]) dz_1 \quad \text{PAGE}$$