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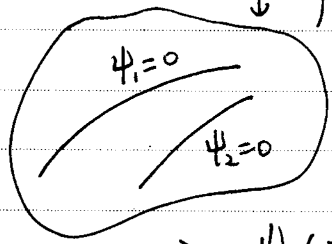
⇒ $\Lambda^2 T'^*(S)$ is not trivial, for, otherwise,
$\Lambda^2 T'^*(S) \cong S \times \mathbb{C}$, ⇒ $H^0(S, \Omega^2) \cong H^0(S, \mathcal{O}) \cong \mathbb{C}$,
which contradicts to $H^0(S, \Omega^2) = \langle \psi_1, \psi_2 \rangle$.

⇒
$$\begin{array}{c} \Lambda^2 T'^*(S) \\ \downarrow \uparrow \psi_1, \psi_2 \\ S \end{array}$$



Choose p_1, p_2 & p_3 s.t
$p_2, p_3 \in (\psi_1 = 0)$, and $p_1 \notin (\psi_1 = 0)$.

⇒ Choose $0 \neq \tau_i \in \Lambda^2 T'_{p_i}(S)$.

⇒ $\psi_1(\tau_2) = \psi_1(\tau_2) = 0$, and $\psi_1(\tau_1) \neq 0$.

⇒
$$\begin{pmatrix} \psi_1(\tau_1), & \overset{=0}{\psi_1(\tau_2)}, & \overset{=0}{\psi_1(\tau_3)} \\ \psi_2(\tau_1), & \psi_2(\tau_2), & \psi_2(\tau_3) \end{pmatrix} \begin{pmatrix} a_1 \\ a_2 \\ a_3 \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$$

⇒ $a_1 \psi_1(\tau_1) = 0$ ⇒ $a_1 = 0$.

⇒ This implies that $\exists$ no τ_p's $\in \Lambda^2_p T'(S)$ s.t

$$\sum_{p \in Z} \langle \psi, \tau_p \rangle = 0 \quad \text{for all } \psi \in H^0(S, \Omega^2),$$
$$Z = \{p_1, p_2, p_3\}.$$

Thus the statement "if $\deg Z > p_g(S)$, then (E, s) always exists" is wrong, I think.

"We can prove the general result by following the same method above"

It remains to intrinsically interpret this relation, which we shall do in the next section.

Residues and Vector Bundles

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