Date

In particular, we see that the line bundle $[E]|_E$ is just the universal bundle $J = -H$ on $E \cong \mathbb{P}^{n-1}$.

「 According to p145. the universal bundle J is given by $\{(Z, v) \in \mathbb{P}^n \times \mathbb{C}^{n+1} \mid v \in Z\}$.

$$\mathcal{U}_0 = (z_0 \neq 0).$$

$$((z_0, \cdots z_n), \lambda(z_0, \cdots z_n)) \in J.$$

$$\Rightarrow \underset{\substack{\Uparrow \\ \mathbb{C}^{n+1}}}{\lambda(z_0, \cdots z_n)} \longmapsto \lambda z_0 \in \mathbb{C}$$

$$\mathcal{U}_0 \times \mathbb{C} \longleftarrow J|_{\mathcal{U}_0}$$

$$((z_0 \cdots z_n), z_0\lambda) \longleftarrow ((z_0, \cdots z_n), \lambda(z_0 \cdots z_n))$$

$$\mathcal{U}_1 \times \mathbb{C} \longleftarrow J|_{\mathcal{U}_1}$$

$$((z_0, \cdots z_n), z_1\lambda) \longleftarrow ((z_0, \cdots z_n), \lambda(z_0 \cdots z_n))$$

$$\Rightarrow \quad g_{01} z_1 \lambda = z_0 \lambda \quad \Rightarrow \quad g_{01} = \frac{z_0}{z_1}$$

Similarly, we get the transition function $g_{ij} = \dfrac{z_i}{z_j}$ 」

Dually, the line bundle $[-E] = [E]^*$ has as fiber over any point $(z, l) \in \tilde{\mathcal{U}}$ the space of linear functionals on the line $l \subset \mathbb{C}^n$; $[-E]|_E$ is the hyperplane bundle on E.

Now we have seen that E is naturally identified with $\mathbb{P}(T_x'(M))$, so that the global sections of $[-E]$ over E correspond exactly to the linear functionals on the tangent space, i.e.,

(**) $$H^0(E, \mathcal{O}_E(-E)) = T_x^{*\prime}(M).$$

PAGE