represented by Z, i.e.

$$J_Z = \{ \lambda (z_0, \cdots z_n), \ \lambda \in \mathbb{C} \}.$$

To see that in fact $J = [-H]$, consider the section e_0 of J over $U_0 = (z_0 \neq 0) \subset \mathbb{P}^n$ given by

$$e_0(Z) = \left(1, \frac{z_1}{z_0}, \cdots \frac{z_n}{z_0}\right).$$

e_0 is clearly holomorphic and nonzero in U_0 and extends to a global meromorphic section of J with a pole of order 1 along the hyperplane $(z_0 = 0) \subset \mathbb{P}^n$. Thus $J = [(e_0)] = [-H]$.

Pf On $U_0 = (z_0 \neq 0)$, $J|_{U_0} \cong U_0 \times \mathbb{C}$.

$$J|_{U_0} \longrightarrow U_0 \times \mathbb{C}$$

$$\Big([(z_0, z_1 \cdots z_n)], [(\lambda, \lambda \tfrac{z_1}{z_0}, \cdots \lambda \tfrac{z_n}{z_0})] \Big) \longmapsto \big([(z_0, z_1, \cdots z_n)], \ \lambda \big)$$

$$\left(1, \frac{z_1}{z_0}, \cdots \frac{z_n}{z_0}\right) \in \mathbb{C}^n.$$

$$\Rightarrow \lambda \left(1, \frac{z_1}{z_0}, \cdots \frac{z_n}{z_0}\right) \in \mathbb{C}^n.$$

$$U_0 \times \mathbb{C}^n \longrightarrow J|_{U_0} \subset U_0 \times \mathbb{C}^{n+1}$$

$$\big([(z_0, \cdots z_n)], (\lambda_1 \cdots \lambda_{n+1}) \big) \longmapsto \left([(z_0, \cdots z_n)], \begin{pmatrix} \lambda_1 (1, \frac{z_1}{z_0}, \cdots \frac{z_n}{z_0}) \\ \lambda_2 (0, 1, 0, \cdots 0) \\ \vdots \\ \lambda_n (0, 0, \cdots 1, 0) \\ \lambda_{n+1} (0, 0, \cdots 0, 1) \end{pmatrix} \right)$$

biholomorphic. (p19).

$\Downarrow$

J is subbundle of $\mathbb{P}^n \times \mathbb{C}^{n+1}$.

$$U_0 \xrightarrow{e_0} J|_{U_0}$$

$$[(z_0, \cdots z_n)] \longmapsto \left(1, \frac{z_1}{z_0}, \cdots \frac{z_n}{z_0}\right)$$

Extend e_0 to $\mathbb{P}^n$ as follows:

For simplicity, $n = 2$.

On $U_0 = (z_0 \neq 0)$, $e_0 : [z_0, z_1, z_2] \longmapsto \left(1, \frac{z_1}{z_0}, \frac{z_2}{z_0}\right)$.

On $U_1 = (z_1 \neq 0)$, to extend, we have to find transition functions.