

$$\begin{array}{ccc}
 U & \xrightarrow{f_i, \beta} & \mathbb{C} \\
 \varphi \downarrow & \nearrow & \\
 \mathbb{C}^n & & \\
 & \left(\frac{\partial f_i}{\partial w_l} \right)_{l=1 \dots n} &
 \end{array}$$

$$\begin{aligned}
 [(z_0, z_1, \dots, z_n)] &\longmapsto a_{1,0} + a_{11} \frac{z_1}{z_0} + \dots + a_{1n} \frac{z_n}{z_0} \\
 &\text{on } U_0 = (z_0 \neq 0)
 \end{aligned}$$

$$\begin{aligned}
 [(z_0, z_1, \dots, z_n)] &\longmapsto a_{1,0} \frac{z_0}{z_1} + a_{11} + \frac{z_2}{z_1} a_{12} + \dots + a_{1n} \frac{z_n}{z_1} \\
 &\text{on } U_1 = (z_1 \neq 0)
 \end{aligned}$$

$$\{ [z_0, \dots, z_n] \in \mathbb{P}^n \mid a_{1,0} z_0 + a_{11} z_1 + \dots + a_{1n} z_n = 0 \} = V$$

$$V \cap U_0 = (z_0 \neq 0) \xrightarrow{f'_0} \mathbb{C}$$

$$[z_0, z_1, \dots, z_n] \longmapsto a_{1,0} + a_{11} \frac{z_1}{z_0} + \dots + a_{1n} \frac{z_n}{z_0}$$

$$V \cap U_1 = (z_1 \neq 0) \xrightarrow{f'_1} \mathbb{C}$$

$$[z_0, z_1, \dots, z_n] \longmapsto a_{1,0} \frac{z_0}{z_1} + a_{11} + a_{12} \frac{z_2}{z_1} + \dots + a_{1n} \frac{z_n}{z_1}$$

$$V \cap U_2 = (z_2 \neq 0) \xrightarrow{f'_2} \mathbb{C}$$

$$[z_0, z_1, \dots, z_n] \longmapsto a_{1,0} \frac{z_0}{z_2} + a_{11} \frac{z_1}{z_2} + a_{12} + \dots + a_{1n} \frac{z_n}{z_2}$$