$$= \frac{(-1)^{n-1}}{\langle v, v\rangle^n} (-1)^{\frac{(n-1)n}{2}} \sum_{i=0}^{n} (-1)^{i-1} \bar{v}^i d\bar{v}^1 \wedge \cdots \wedge \widehat{d\bar{v}^i} \wedge \cdots \wedge d\bar{v}^n \wedge dz_1 \wedge \cdots \wedge dz_n \cdot$$

$$\det\left(\frac{\partial v^i}{\partial z_j}\right) \qquad (n-1)!$$

$\Rightarrow$

$$\underline{\beta(v, \bar{v})} = -\left(\frac{1}{\det A_p}\right)^{-1} C_n \sum_{i=0}^{n} (-1)^{i-1} \bar{v}^i d\bar{v}^1 \wedge \cdots \quad d\bar{v}^n \wedge dz_1 \wedge \cdots \wedge dz_n \quad (*)$$

This means that

$$\beta(v, \bar{v}) = \left(\frac{\sqrt{-1}}{2\pi}\right)^{+n} \partial \log \|v\|^2 \wedge (\partial\bar{\partial} \log \|v\|^2)^{n-1}$$

for $\left(\frac{\sqrt{-1}}{2\pi}\right)^n \partial \log \|v\|^2 \wedge (\partial\bar{\partial} \log \|v\|^2)^{n-1}$

$$= \left(\frac{\sqrt{-1}}{2\pi}\right)^n (-1) \ (-1)^{\frac{n(n+1)}{2}} (n-1)! \ \det\left(\frac{\partial v^i}{\partial z_j}\right) \sum_{i=0}^{n} \frac{(-1)^{i-1} \bar{v}^i d\bar{v}^1 \wedge \cdots \wedge \widehat{d\bar{v}^i} \wedge \cdots dz_1 \wedge \cdots \wedge dz_n}{\langle v, v\rangle^n}$$

$$= (-1) \ C_n \ \det A_p \sum_{i=0}^{n} \frac{(-1)^{i-1} \bar{v}^i d\bar{v}^1 \wedge \cdots \qquad \wedge dz_n}{\langle v, v\rangle^n}$$

$$= \qquad \beta(v, \bar{v}). \qquad \text{by } (*).$$

$\lrcorner$

Putting every thing together,

$$\int_M P\left(\frac{\sqrt{-1}}{2\pi} \Theta\right) = \int_{M - \cup B_\epsilon(p_\nu)} P\left(\frac{\sqrt{-1}}{2\pi} \Theta\right)$$

$$= - \sum_{\nu} \int_{\partial B_\epsilon(p_\nu)} \Phi$$