

$$\langle k(z, w), k(z, w) \rangle = \frac{\sum |z_i - w_i|^2}{\|z - w\|^{4n}} = \frac{\|z - w\|^2}{\|z - w\|^{4n}} \quad // \omega$$

$$\Rightarrow \sqrt{\langle k(z, w), k(z, w) \rangle} = \|k(z, w)\| = \left( \frac{1}{\|z - w\|^{4n-2}} \right)^{\frac{1}{2}}$$

$$= \frac{1}{\|z - w\|^{2n-1}}, \text{ again we omitted constant.}$$

$$\int_{\mathbb{C}^n \times \mathbb{C}^n} \frac{1}{\|z - w\|^{2n-1}} dz \wedge d\bar{z} \wedge dw \wedge d\bar{w}$$

$$= \int_{\mathbb{C}^n} \left( \int_{\mathbb{C}^n} \frac{1}{\|z - w\|^{2n-1}} dz \wedge d\bar{z} \right) dw \wedge d\bar{w}.$$

$\Rightarrow dz \wedge d\bar{z}$  is a volume form of deg  $2n$ .

$\Rightarrow$  By 370, for each  $w$ ,  $\int_{\mathbb{C}^n} \frac{1}{\|z - w\|^{2n-1}} dz \wedge d\bar{z} < \infty$ , since  $2n-1 < 2n$ .

$$\Rightarrow \int_{\mathbb{C}^n} \left( \int_{\mathbb{C}^n} \frac{1}{\|z - w\|^{2n-1}} dz \wedge d\bar{z} \right) dw \wedge d\bar{w} = \infty, \text{ but}$$

it is locally integrable.  $\square$

Its decomposition into bitype is

$$k(z, w) \in \bigoplus_{q=1}^n L^{(0, q-1)(n, n-q)}(\mathbb{C}^n \times \mathbb{C}^n, \text{loc}).$$

We then define

$$K: A_c^{0, q}(\mathbb{C}^n) \longrightarrow A^{0, q-1}(\mathbb{C}^n)$$