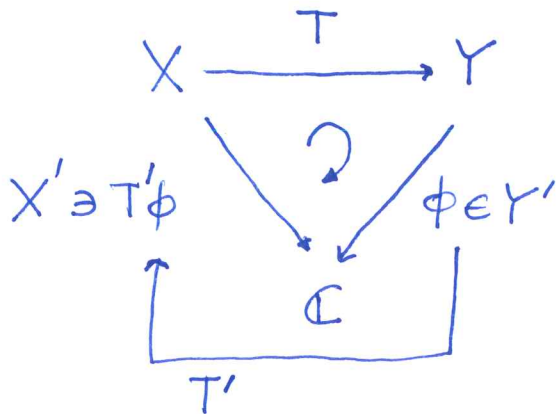


Banach adjoint

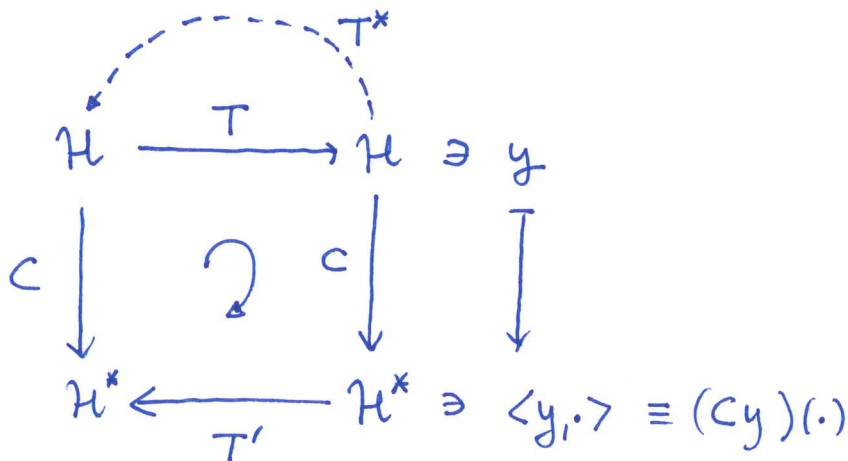
of $T \in \mathcal{B}(X, Y)$



$$\begin{aligned} \phi(Tx) &\stackrel{\text{def}}{=} (T'\phi)x \\ \forall x \in X \\ \forall \phi \in Y' \end{aligned}$$

Hilbert adjoint

of $T \in \mathcal{B}(\mathcal{H})$



$$T^* := C^{-1}T'C : \mathcal{H} \rightarrow \mathcal{H}$$

$$\begin{aligned} \langle x, Ty \rangle &= \underbrace{(Cx)}_{\in \mathcal{H}^*} \underbrace{(Ty)}_{\in \mathcal{H}} = \underbrace{(T'Cx)}_{\in \mathcal{H}^*} y = (CC^{-1}T'Cx) y \\ &= \langle C^{-1}T'Cx, y \rangle \\ &= \langle T^*x, y \rangle \end{aligned}$$

$$\forall x, y \in \mathcal{H}$$