

$$\mathcal{C}_1 = C^* \frac{s}{s^*s = 1: \quad ss^* = 1} \xleftarrow{\text{on}} \mathcal{T}_1 = C^* \frac{t}{t^*t = 1: \quad tt^* < 1} \xleftarrow{\text{in}} \mathcal{K}_1$$

$$\mathbb{T} \triangleleft_0 \mathbb{C} \xleftarrow{\text{on}} \mathcal{T} | \mathbb{T} \triangleleft_\varphi^2 \mathbb{C} \xleftarrow{\text{in}} \mathcal{K} | \mathbb{T} \triangleleft_\varphi^2 \mathbb{C}$$

$$z^0 \overset{*}{z}^0 = I - T_z T_z^* \in \mathcal{T}$$

$$z^m \overset{*}{z}^n = T_z^m \underbrace{z^0 \overset{*}{z}^0}_{\in \mathcal{T}} T_z^n = T_z^m \underbrace{I - T_z T_z^*}_{\in \mathcal{T}} T_z^n \in \mathcal{T}$$

$$\Rightarrow \mathcal{E} \subset \mathcal{T} \Rightarrow \mathcal{F} = \langle \mathcal{E} \rangle \subset \mathbb{T} \Rightarrow \mathcal{K} = \overline{\mathcal{F}} \subset \mathcal{T}$$

$$\mathcal{C}_n = C^* \frac{s_1 \cdots s_n}{s_i^* s_j = \delta_j^i: \quad \sum_i s_i s_i^* = 1} \xleftarrow{\text{on}} \mathcal{T}_n = C^* \frac{t_1 \cdots t_n}{t_i^* t_j = \delta_j^i: \quad \sum_i t_i t_i^* < 1} \xleftarrow{\text{in}} \mathcal{K}_n$$

$$\mathbb{X} \mathbb{C}^n = \sum_k^{\mathbb{N}} \overset{k}{\mathbb{X}} \mathbb{C}^n$$

$$\underbrace{\overset{k+1}{\mathbb{X}} \mathbb{C}^n}_{\mathbb{X} \mathbb{X}^1 \mathbb{X} \cdots \mathbb{X}^k} \xleftarrow{\mathbb{X}} \underbrace{\overset{k}{\mathbb{X}} \mathbb{C}^n}_{\mathbb{X}^1 \mathbb{X} \cdots \mathbb{X}^k} \text{ monomet}$$

$$\widehat{\mathbb{X}}^* \mathbb{X} = \mathbb{X} \mathbb{X}^1$$

$$\sum_i \mathbb{X}^i \widehat{\mathbb{X}}^* \mathbb{X} + \mathbb{X}^1 \mathbb{X}^1 = \mathbb{X}$$

$$\mathbb{X}^1 = 1 \in \overset{0}{\mathbb{X}} \mathbb{C}^n$$

$$\mu \in n^k \Rightarrow \mathbb{X}^\mu = \mathbb{X}^{\mu_1} \mathbb{X} \cdots \mathbb{X} \mathbb{X}^{\mu_k} \in \overset{k}{\mathbb{X}} \mathbb{C}^n$$

$$\mathcal{T}_n \supset \mathcal{K}_n$$

$$\begin{aligned} \mathcal{L} \cdot \mathcal{L}^* &= \mathcal{L} - \sum_i \underbrace{\mathcal{L}^i \mathcal{L}}_* \underbrace{\mathcal{L}^i \mathcal{L}}_* \\ \Rightarrow \mathcal{L}^\mu \mathcal{L}^{\nu*} &= \underbrace{\mathcal{L}^\mu \mathcal{L} \mathcal{L}}_* \overbrace{\mathcal{L}^\nu \mathcal{L} \mathcal{L}}^* = \underbrace{\mathcal{L}^\mu \mathcal{L}}_* \overbrace{\mathcal{L} \cdot \mathcal{L}}^* \overbrace{\mathcal{L}^\nu \mathcal{L}}^* = \underbrace{\mathcal{L}^\mu \mathcal{L}}_* \overbrace{\mathcal{L} - \sum_i \underbrace{\mathcal{L}^i \mathcal{L} \mathcal{L}^i \mathcal{L}}_*}_* \overbrace{\mathcal{L}^\nu \mathcal{L}}^* \in \mathcal{T}_n \\ \Rightarrow \mathcal{E} \subset \mathcal{T} &\Rightarrow \mathcal{F} = \langle \mathcal{E} \rangle \subset \mathbb{T} \Rightarrow \mathcal{K} = \overline{\mathcal{F}} \subset \mathcal{T} \end{aligned}$$

$$\underbrace{\mathcal{L}}_* \mathbb{C}^n \xrightarrow[\text{unit}]{\underbrace{\mathcal{L}}_*} \underbrace{\mathcal{L}}_* \mathbb{C}^n$$

$$\begin{array}{ccc} \mathcal{K}_n & \xleftarrow{\underbrace{\mathcal{L}^{k+1} \mathcal{L} \times \times \mathcal{L}^k}_*} & \mathcal{K}_n \\ \text{in} \downarrow & & \downarrow \text{in} \\ \mathcal{T}_n & \xleftarrow{\underbrace{\mathcal{L}^{k+1} \mathcal{L} \times \times \mathcal{L}^k}_*} & \mathcal{T}_n \\ \text{on} \downarrow & & \downarrow \text{on} \\ \mathcal{C}_n & \xleftarrow{\underbrace{\mathcal{L}^{k+1} \mathcal{L} \times \times \mathcal{L}^k}_*} & \mathcal{C}_n \end{array}$$

$$\mathcal{L} \in \cup \mathbb{C}_n^n \Rightarrow \underbrace{\mathcal{L}^{k+1} \mathcal{L}}_* \underbrace{\mathcal{L} \mathcal{L}}_* \underbrace{\mathcal{L}^k \mathcal{L}}_* = \mathcal{L} \mathcal{L} \mathcal{L}$$