$$\text{unit alg } \mathbb{C}\triangle \ni \underset{\mathbb{N}}{\mathbb{C}} \urcorner_{\in}^{n} \mathbb{C}_n = \mathbb{C}\frac{E_{ij}^{\pm} : i \leqslant j : \quad q^{\pm h_i}}{K_i E_j = \overset{a_{ij}}{q} E_j K_i : \quad K_i F_j = \overset{-a_{ij}}{q} F_j K_i : \quad E_i F_j - F_j E_i = \delta_{ij} \dfrac{K_i - K_i^{-1}}{q - \overset{-1}{q}}} \text{ relations}$$

$$\Delta E_i = E_i \otimes 1 + K_i \otimes E_i$$

$$\Delta F_j = F_j \otimes K_j^{-1} + 1 \otimes F_j$$

$$\Delta K_i^{\pm} = K_i^{\pm} \otimes K_i^{\pm}$$

$$\Delta \mathcal{A} \in \mathcal{A} \otimes \mathcal{J} + \mathcal{J} \otimes \mathcal{A}$$

$$\Delta \left(E_i F_j - F_j E_i - \delta_{ij} \frac{K_i - K_i^{-1}}{q - \overset{-1}{q}} \right) = \Delta E_i \Delta F_j - \Delta F_j \Delta E_i - \delta_{ij} \frac{\Delta K_i - \Delta K_i^{-1}}{q - \overset{-1}{q}}$$

$$= \underbrace{E_{i+} \otimes K_i \otimes E_i}\, \underbrace{F_j \otimes K_j^{-1} + 1 \otimes F_j} - \underbrace{F_j \otimes K_j^{-1} + 1 \otimes F_j}\, \underbrace{E_{i+} \otimes K_i \otimes E_i} - \delta_{ij} \frac{K_i \otimes K_i - K_i^{-1} \otimes K_i^{-1}}{q - \overset{-1}{q}}$$

$$= E_i F_j \otimes K_j^{-1} + E_i \otimes F_j + K_i F_j \otimes E_i K_j^{-1} + K_i \otimes E_i F_j$$

$$- F_j E_i \otimes K_j^{-1} - E_i \otimes F_j - F_j K_i \otimes K_j^{-1} E_i - K_i \otimes F_j E_i - \delta_{ij} \frac{K_i \otimes K_i - K_i^{-1} \otimes K_i^{-1}}{q - \overset{-1}{q}}$$

$$= \underbrace{E_i F_j - F_j E_i} \otimes K_j^{-1} + \delta_{ij} \frac{K_j^{-1} \otimes K_j^{-1}}{q - \overset{-1}{q}} + K_i \otimes \underbrace{E_i F_j - F_j E_i}$$

$$- \delta_{ij} \frac{K_i \otimes K_i}{q - \overset{-1}{q}} + K_i F_j \otimes E_i K_j^{-1} - F_j K_i \otimes K_j^{-1} E_i$$

$$= \underbrace{E_i F_j - F_j E_i - \delta_{ij} \frac{K_i - K_j^{-1}}{q - \overset{-1}{q}}} \otimes K_j^{-1} + K_i \otimes \underbrace{E_i F_j - F_j E_i - \delta_{ij} \frac{K_i - K_j^{-1}}{q - \overset{-1}{q}}}$$

$$+ K_i F_j \otimes \underbrace{E_i K_j^{-1} - \overset{a_{ji}}{q} K_j^{-1} E_i} + \underbrace{\overset{a_{ij}}{q} K_i F_j - F_j K_i} \otimes K_j^{-1} E_i \in \mathcal{A} \otimes \mathcal{J} + \mathcal{J} \otimes \mathcal{A}$$

$$S E_i = - K_i^{-1} E_i$$

$$S F_i = - F_i K_i$$

$$SK_i = K_i^{-1}$$

$$\varepsilon E_i = 0 = \varepsilon F_i$$

$$\varepsilon K_i = 1$$