$$ {}^{n}_{\mathsf{C}}\mathbb{C}_{n}\underset{m}{\overset{q}{\triangle}}\mathbb{C} = {}^{n}\mathbb{C}_{n}\underset{m}{\overset{q}{\triangle}}\mathbb{C} \otimes \mathbb{C}[\overset{-1}{\det}_q g] \xrightarrow[\text{sub-bigebra}]{\hspace{6em}} \mathbb{C}_{\mathbb{N}} \overset{q}{\triangledown}{}^{n}_{\oplus}\mathbb{C}_{n} \triangle \mathbb{C} $$

$$ {}^{n}_{\mathsf{C}}\mathbb{C}_{n}\underset{m}{\overset{q}{\triangle}}\mathbb{C} = {}^{n}\mathbb{C}_{n}\underset{m}{\overset{q}{\triangle}}\mathbb{C} \,/\, \left(\det_q g - 1\right) \xrightarrow[\text{sub-bigebra}]{\hspace{6em}} \mathbb{C}_{\mathbb{N}} \overset{q}{\triangledown}{}^{n}_{\in}\mathbb{C}_{n} \triangle \mathbb{C} $$

$$ {}^{n}_{\mathsf{C}}\mathbb{C}_{n}\underset{m}{\overset{q}{\triangle}}\mathbb{C} \xrightarrow[\text{unit hom}]{\delta} {}^{n}_{\mathsf{C}}\mathbb{C}_{n}\underset{m}{\overset{q}{\triangle}}\mathbb{C} \otimes {}^{n}_{\mathsf{C}}\mathbb{C}_{n}\underset{m}{\overset{q}{\triangle}}\mathbb{C} $$

$$ \delta\, {}^{i}g_{k} = \sum_{j} {}^{i}g_{j} \otimes {}^{j}g_{k} $$

$$ \delta \overset{\pm}{\det}_q g = \otimes \overset{\pm}{\det}_q g \overset{\pm}{\det}_q g $$

$$ {}^{n}_{\mathsf{C}}\mathbb{C}_{n}\underset{m}{\overset{q}{\triangle}}\mathbb{C} \xrightarrow[\text{antipode}]{S} {}^{n}_{\mathsf{C}}\mathbb{C}_{n}\underset{m}{\overset{q}{\triangle}}\mathbb{C} $$

$$ S\, {}^{i}g_{j} = \overset{i-j}{(-q)} \frac{\det_q{}^{N\llcorner j}g_{N\llcorner i}}{\det_q g} = \overset{i-j}{(-q)} \underbrace{\det_q{}^{N\llcorner j}g_{N\llcorner i}}_{= {}^{j}\widetilde{g}_{i} \text{ cofactor}} $$

$$ S \overset{\pm}{\det}_q g = \overset{\pm}{\det}_q g $$

$$ \sum_{j} \overset{j-k}{(-q)}\, {}^{i}g_{j}\, {}^{k}\widetilde{g}_{j} = {}^{i}\delta_{k} $$

$$ \text{LHS} = \sum_{j} {}^{i}g_{j}\, \overbrace{S^{j}g_{k}} = \mu\,(I \otimes S)\, \overbrace{\sum_{j} {}^{i}g_{j} \otimes {}^{j}g_{k}} = \mu\,(I \otimes S)\, \overbrace{\delta^{i}g_{k}} = \overbrace{\varepsilon^{i}g_{k}}\, e = {}^{i}\delta_{k}\, e $$

$$ n = 2: \quad {}^{1}g_{1}\, {}^{2}g_{2} - qw = 1 = {}^{2}g_{2}\, {}^{1}g_{1} - \overset{-1}{q}\, w $$

$$ w = {}^{1}g_{2}\, {}^{2}g_{1} $$

$$ S \begin{array}{c|c} {}^{1}g_{1} & {}^{1}g_{2} \\ \hline {}^{2}g_{1} & {}^{2}g_{2} \end{array} = \begin{array}{c|c} {}^{2}g_{2} & -\overset{-1}{q}\,{}^{1}g_{2} \\ \hline -q g^{2}_{1} & {}^{1}g_{1} \end{array} $$