$$\mathbb{K} \triangleleft \underline{\mathbb{h}} \to \mathbb{K} \triangleleft \mathbb{h}_{\underset{\omega}{\triangle}} \mathbb{K} = {}^{\mathbb{h}} \overset{\sharp}{\underset{\omega}{\triangle}} \mathbb{K}$$

$$\underset{\mathbb{I}}{\mathbb{C}} \triangleleft \underline{\mathbb{h}} \boxtimes \underset{\mathbb{I}}{\mathbb{C}} \triangleleft \underline{\mathbb{h}} \underset{\overset{\sharp}{p}}{\overset{\overset{\sharp}{d}}{\rightleftarrows}} \underset{I}{\mathbb{C}} \triangleleft \underline{\mathbb{h}} \text{ coab bigebr}$$

$$\mathfrak{b}\mathfrak{b}'|\daleth \underset{\text{prod}}{=} \overset{\sharp}{d}\left(\mathfrak{b}\boxtimes\mathfrak{b}'\right)|\daleth = \mathfrak{b}\boxtimes\mathfrak{b}'||d\daleth = \mathfrak{b}'|\daleth \rtimes \mathfrak{b} = \mathfrak{b}|\mathfrak{b}' \ltimes \daleth$$

$$\overset{\sharp}{p}\mathfrak{b}||\daleth\boxtimes\daleth' \underset{\text{coprod}}{=} \mathfrak{b}|p\underbrace{\daleth\boxtimes\daleth'} = \mathfrak{b}|\daleth\daleth'$$

$$\underbrace{\mathfrak{b}_1\cdots\mathfrak{b}_n}|\daleth = \partial^0_{t_1}\cdots\partial^0_{t_n}\, {}^{\mathfrak{e}^{t_1\mathfrak{b}_1}\cdots\mathfrak{e}^{t_n\mathfrak{b}_n}}\daleth$$

$$\mathfrak{b}|\daleth = \partial^0_t\, {}^{\mathfrak{e}^{t\mathfrak{b}}}\daleth$$

$$d\daleth = \sum_j \daleth_j \boxtimes \daleth^j \Rightarrow {}^{st}\daleth = \sum_j {}^s\daleth_j\, {}^t\daleth^j$$

$$\Rightarrow \mathfrak{b}\mathfrak{b}'|\daleth = \underbrace{\mathfrak{b}\boxtimes\mathfrak{b}'}||d\daleth = \sum_j \underbrace{\mathfrak{b}|\daleth_j}\underbrace{\mathfrak{b}'|\daleth^j} = \sum_j \left(\partial_s^{0\,\mathfrak{e}^{\mathfrak{b}s}}\daleth_j\right)\left(\partial_t^{0\,\mathfrak{e}^{\mathfrak{b}'t}}\daleth^j\right) = \partial_s\,\partial_t\, {}^{\mathfrak{e}^{\mathfrak{b}s}\mathfrak{e}^{\mathfrak{b}'t}}\daleth$$

$$\overset{\sharp}{p}\mathfrak{b} = \mathfrak{b}\boxtimes 1 + 1\boxtimes\mathfrak{b}$$

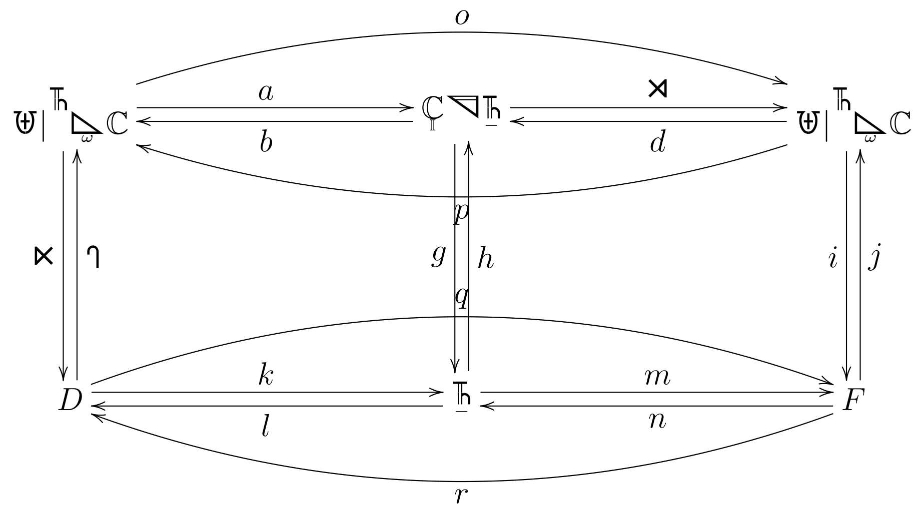
$$\overset{\sharp}{p}\mathfrak{b}|\daleth\boxtimes\daleth' = \mathfrak{b}|\underbrace{\daleth\daleth'} = {}^e\overbrace{\mathfrak{b}\ltimes\underbrace{\daleth\daleth'}} = {}^e\overbrace{\mathfrak{b}\ltimes\daleth}\,{}^e\daleth' + {}^e\daleth\,{}^e\overbrace{\mathfrak{b}\ltimes\daleth'} = \underbrace{\mathfrak{b}|\daleth}\,\underbrace{1|\daleth'} + \underbrace{1|\daleth}\,\underbrace{\mathfrak{b}|\daleth'} = \underbrace{\mathfrak{b}\boxtimes1+1\boxtimes\mathfrak{b}}||\underbrace{\daleth\boxtimes\daleth'}$$

$$\mathbb{C}\overset{1}{\underset{\gamma}{\triangleleft}}\mathbb{h} \xleftarrow{\mathfrak{e}9} \underset{\mathbb{I}}{\mathbb{C}}\triangleleft\underline{\mathbb{h}} \to \mho|\, {}^{\mathbb{h}}\underset{\omega}{\triangle}\mathbb{C}$$

$$P|\daleth = {}^e\overbrace{P\ltimes\daleth}$$

$$\mathfrak{b}|\daleth = \partial^0_t\, {}^{\mathfrak{e}^{t\mathfrak{b}}}\daleth$$

$$e|\daleth = {}^e\daleth$$



$$\overbrace{\mathsf{b} \ltimes \daleth}^{s} = \partial_t^0 {}^{s\mathfrak{e}^{t\mathsf{b}}}\daleth \Rightarrow \mathsf{b} \ltimes \left(\mathsf{b}' \ltimes \daleth\right) - \mathsf{b}' \ltimes (\mathsf{b} \ltimes \daleth) = \left(\mathsf{b} \times \mathsf{b}'\right) \ltimes \daleth$$

$$\overbrace{\daleth \rtimes \mathsf{b}}^{s} = \partial_t^0 {}^{\mathfrak{e}^{t\mathsf{b}}s}\daleth \Rightarrow (\daleth \rtimes \mathsf{b}) \rtimes \mathsf{b}' - \left(\daleth \rtimes \mathsf{b}'\right) \rtimes \mathsf{b} = \daleth \rtimes \left(\mathsf{b} \times \mathsf{b}'\right)$$

$$\underbrace{P\acute{P}}|\daleth = P|\underbrace{\acute{P} \ltimes \daleth} = \acute{P}|\underbrace{\daleth \rtimes P}$$

$$\text{LHS} = \overbrace{\underbrace{P\acute{P}} \ltimes \daleth}^{e} = \overbrace{P \ltimes \underbrace{\acute{P} \ltimes \daleth}}^{e} = P|\underbrace{\acute{P} \ltimes \daleth}$$

$$\overbrace{\underbrace{\mathsf{b}_1 \cdots \mathsf{b}_n} \ltimes \daleth}^{s} = \partial_{t_1}^0 \cdots \partial_{t_n}^0 {}^{s\mathfrak{e}^{t_1\mathsf{b}_1}\cdots\mathfrak{e}^{t_n\mathsf{b}_n}}\daleth$$

$$\underbrace{\mathsf{b}_1 \cdots \mathsf{b}_n}|\daleth = \partial_{t_1}^0 \cdots \partial_{t_n}^0 {}^{\mathfrak{e}^{t_1\mathsf{b}_1}\cdots\mathfrak{e}^{t_n\mathsf{b}_n}}\daleth$$

$$\overbrace{\underbrace{\mathsf{b}_0\mathsf{b}_1 \cdots \mathsf{b}_n} \ltimes \daleth}^{s} = \overbrace{\mathsf{b}_0 \ltimes \underbrace{\overbrace{\mathsf{b}_1 \cdots \mathsf{b}_n} \ltimes \daleth}}^{s} = \partial_{t_0}^0 {}^{s\mathfrak{e}^{t_0\mathsf{b}_0}}\overbrace{\underbrace{\mathsf{b}_1 \cdots \mathsf{b}_n} \ltimes \daleth}^{\text{Ind}}$$

$$= \partial_{t_0}^0 \partial_{t_1}^0 \cdots \partial_{t_n}^0 {}^{s\mathfrak{e}^{t_0\mathsf{b}_0}\mathfrak{e}^{t_1\mathsf{b}_1}\cdots\mathfrak{e}^{t_n\mathsf{b}_n}}\daleth$$

$$\Delta P = \sum_i P_i \boxtimes P^i \underset{\text{Leibniz}}{\Longrightarrow} P \ltimes \underbrace{\daleth\acute{\daleth}} = \sum_i \underbrace{P_i \ltimes \daleth}\,\underbrace{P^i \ltimes \acute{\daleth}}$$

$$\Delta\mathsf{b} = \mathsf{b} \boxtimes e + e \boxtimes \mathsf{b}$$

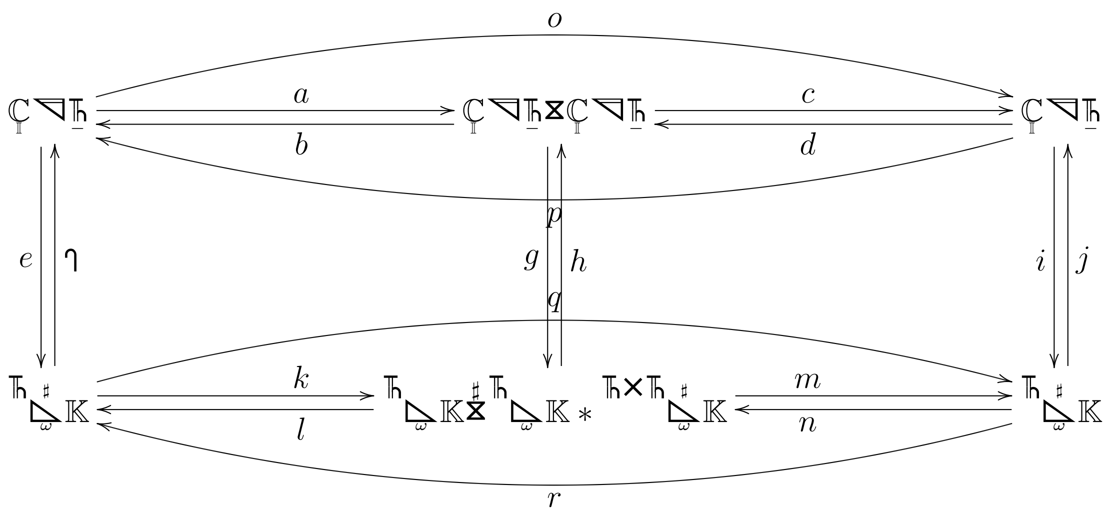
$$\mathsf{b} \ltimes \underbrace{\daleth\acute{\daleth}} = \underbrace{\mathsf{b} \ltimes \daleth}\,\acute{\daleth} + \daleth\underbrace{\mathsf{b} \ltimes \acute{\daleth}} = \underbrace{\mathsf{b} \ltimes \daleth}\,\underbrace{e \ltimes \acute{\daleth}} + \underbrace{e \ltimes \daleth}\,\underbrace{\mathsf{b} \ltimes \acute{\daleth}}$$

$$\Delta\dot{P} = \sum_{\dot{a}} \dot{P}_{\dot{a}} \text{⧗} \dot{P}^{\dot{a}} \Rightarrow \Delta\left(P\acute{P}\right) = (\Delta P)\left(\Delta\acute{P}\right) = \sum_{a}\sum_{\acute{a}} P_a \acute{P}_{\acute{a}} \text{⧗} P^a \acute{P}^{\acute{a}}$$

$$\underbrace{P\acute{P}} \ltimes \underbrace{\text{ɿ}\acute{\text{ɿ}}} = P \ltimes \overbrace{\acute{P} \ltimes \underbrace{\text{ɿ}\acute{\text{ɿ}}}} = P \ltimes \sum_{\acute{a}} \underbrace{\acute{P}_{\acute{a}} \ltimes \text{ɿ}}\,\underbrace{\acute{P}^{\acute{a}} \ltimes \acute{\text{ɿ}}} = \sum_{a:\acute{a}} \overbrace{\underbrace{P_a\acute{P}_{\acute{a}}} \ltimes \text{ɿ}}\,\overbrace{\underbrace{P^a\acute{P}^{\acute{a}}} \ltimes \acute{\text{ɿ}}}$$

$$\Delta P || \underbrace{\text{ɿ}\text{⧗}\acute{\text{ɿ}}} = P | \underbrace{\text{ɿ}\acute{\text{ɿ}}}$$

$$\underbrace{P\acute{P}} | \text{ɿ} = \underbrace{P\text{⧗}\acute{P}} || \Delta\text{ɿ}$$



$$\underbrace{P\text{⧗}\acute{P}} || \underbrace{\text{ɿ}\text{⧗}\acute{\text{ɿ}}} := \underbrace{P|\text{ɿ}}\,\underbrace{\acute{P}|\acute{\text{ɿ}}}$$

$$P|\left(\text{ɿ}\acute{\text{ɿ}}\right) = {}^{e}\left(P \ltimes \left(\text{ɿ}\acute{\text{ɿ}}\right)\right) = \sum_{i} {}^{e}\left(P_i \ltimes \text{ɿ}\right) {}^{e}\left(P^i \ltimes \acute{\text{ɿ}}\right) = \sum_{i} \left(P_i|\text{ɿ}\right)\left(P^i|\acute{\text{ɿ}}\right) = (\Delta P) || \left(\text{ɿ}\text{⧗}\acute{\text{ɿ}}\right)$$