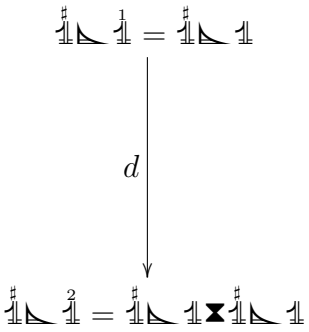

$$d\underbrace{\Delta^{j}\otimes_{j}\Delta}=\underbrace{1\otimes\Delta^{j}-\Delta^{j}\otimes 1}\otimes\overbrace{1\otimes_{j}\Delta-{}_{j}\Delta\otimes 1}$$

$$d\overbrace{\Delta\underbrace{d\Delta}}=\underbrace{1\otimes\Delta-\Delta\otimes 1}\otimes\overbrace{1\otimes\Delta'-\Delta'\otimes 1}=\underbrace{d\Delta}\otimes\underbrace{d\Delta'}$$

$$\Delta\underbrace{d\Delta'}=\Delta\underbrace{1\otimes\Delta'-\Delta'\otimes 1}=\Delta\otimes\Delta'-\underbrace{\Delta'\Delta}\otimes 1$$

$$\implies \text{LHS}=d\overbrace{\Delta\otimes\Delta'-\underbrace{\Delta'\Delta}\otimes 1}=\underbrace{1\otimes\Delta-\Delta\otimes 1}\otimes\overbrace{1\otimes\Delta'-\Delta'\otimes 1}-\overbrace{1\otimes\underbrace{\Delta'\Delta}-\underbrace{\Delta'\Delta}\otimes 1}\otimes\overbrace{\underbrace{1\otimes 1-1\otimes 1}_{=0}}=\text{RHS}$$