

$$\begin{array}{ccc}
\mathbb{H}^{p|q \leftarrow 0} & \xleftarrow{\mathfrak{N}} & \mathbb{H}^{\dot{p}|\dot{q} \leftarrow 0} \\
\mathbb{D}\mathbb{K} & & \mathbb{D}\mathbb{K} \\
\downarrow \iota & & \downarrow \iota \\
\mathbb{H}^{p|q} & \xleftarrow{\mathfrak{N}} & \mathbb{H}^{\dot{p}|\dot{q}} \\
\mathbb{D}\mathbb{K} & & \mathbb{D}\mathbb{K} \\
\downarrow \jmath & & \downarrow \jmath \\
\mathbb{H}^{p|q} & \xleftarrow{\mathfrak{N} \bowtie} & \mathbb{H}^{\dot{p}|\dot{q}} \\
\mathbb{D}\mathbb{K} & & \mathbb{D}\mathbb{K}
\end{array}$$

$$\underbrace{\mathbb{H}^{p|q} \mathbb{D}\mathbb{K} \mathfrak{N} \mathbb{H}^{\dot{p}|\dot{q}} \mathbb{D}\mathbb{K}}_{\mathbb{H}^{p|q} \mathbb{D}\mathbb{K} \mathfrak{N} \mathbb{H}^{\dot{p}|\dot{q}} \mathbb{D}\mathbb{K}} = \frac{\mathbb{H}^{p|q} \mathbb{D}\mathbb{K} \xleftarrow[\text{lin}]{\mathbb{H}^{\dot{p}|\dot{q}} \mathbb{D}\mathbb{K}} \mathfrak{N} \text{ der}}{\mathbb{H}^{\dot{p}|\dot{q}} \mathbb{D}\mathbb{K} = \mathbb{H}^{\dot{p}|\dot{q}} \mathbb{D}\mathbb{K} + -1 \mathbb{H}^{\dot{p}|\dot{q}} \mathbb{D}\mathbb{K}}$$

$$\begin{array}{ccc}
\mathfrak{b} \in \mathbb{K} \mathbb{D}\mathbb{H}^{p|q} & \xrightarrow{\quad \bowtie \quad} & \underbrace{\mathbb{H}^{p|q} \mathbb{D}\mathbb{K} \mathfrak{N} \mathbb{H}^{\dot{p}|\dot{q}} \mathbb{D}\mathbb{K}}_{\mathbb{H}^{p|q} \mathbb{D}\mathbb{K} \mathfrak{N} \mathbb{H}^{\dot{p}|\dot{q}} \mathbb{D}\mathbb{K}} & \xleftarrow{\quad \bowtie \quad} & \mathbb{K} \mathbb{D}\mathbb{H}^{\dot{p}|\dot{q}} \ni b \\
& & \mathfrak{b} \bowtie \mathfrak{N} \mathfrak{b} = \mathfrak{b} \mathfrak{N} \mathfrak{b} = \mathfrak{b} \mathfrak{b} \mathfrak{N}
\end{array}$$

$$\begin{aligned}
\mathfrak{b} \mathfrak{N} \mathfrak{b} &= \mathfrak{b} \widehat{\mathfrak{N} \mathfrak{b}} = \mathfrak{b} \widehat{\mathfrak{b} \mathfrak{N} \mathfrak{b}} = \widehat{\mathfrak{b} \mathfrak{N} \mathfrak{b} \mathfrak{b}} + \frac{|\mathfrak{b}| |\mathfrak{N} \mathfrak{b}|}{-1} \widehat{\mathfrak{b} \mathfrak{b} \mathfrak{N} \mathfrak{b}} = \widehat{\mathfrak{b} \mathfrak{N} \mathfrak{b} \mathfrak{b}} + \frac{|\mathfrak{b}| |\mathfrak{N} \mathfrak{b}|}{-1} \widehat{\mathfrak{b} \mathfrak{b} \mathfrak{N} \mathfrak{b}} \\
&\mathfrak{N} \mathfrak{b} \mathfrak{b} = \mathfrak{b} \mathfrak{b} \mathfrak{N} = \mathfrak{b} \mathfrak{b}
\end{aligned}$$

$$\widehat{\mathfrak{b} \mathfrak{N} \mathfrak{b}} = \widehat{\mathfrak{b} \mathfrak{b} \mathfrak{N}} = \widehat{\mathfrak{b} \mathfrak{b} \mathfrak{b} \mathfrak{N} + \frac{|\mathfrak{b}| |\mathfrak{N} \mathfrak{b}|}{-1} \mathfrak{b} \mathfrak{b} \mathfrak{N}} = \widehat{\mathfrak{b} \mathfrak{b} \mathfrak{b} \mathfrak{N}} + \frac{|\mathfrak{b}| |\mathfrak{N} \mathfrak{b}|}{-1} \widehat{\mathfrak{b} \mathfrak{b} \mathfrak{N}} = \widehat{\mathfrak{b} \mathfrak{b} \mathfrak{b} \mathfrak{N}} + \frac{|\mathfrak{b}| |\mathfrak{N} \mathfrak{b}|}{-1} \widehat{\mathfrak{b} \mathfrak{b} \mathfrak{b} \mathfrak{N}}$$

$$\mathbb{K} \mathbb{D}\mathbb{H}^{\dot{p}|\dot{q}} \ni \mathfrak{b} \mathfrak{N} \text{ related } \mathfrak{b} \underset{\mathfrak{N}}{\asymp} \mathfrak{b} \Leftrightarrow \mathfrak{b} \mathfrak{N} \mathfrak{b} = \mathfrak{b} \mathfrak{b} \mathfrak{N} \Leftrightarrow \mathfrak{b} \mathfrak{N} \mathfrak{b} = \mathfrak{b} \mathfrak{b} \mathfrak{N}$$

$$\begin{array}{c}
\mathfrak{b} \underset{\mathfrak{N}}{\asymp} \mathfrak{b} : \mathfrak{b} \underset{\mathfrak{N}}{\asymp} \mathfrak{b} \Rightarrow \mathfrak{b} \mathfrak{N} \mathfrak{b} \underset{\mathfrak{N}}{\asymp} \mathfrak{b} \mathfrak{N} \mathfrak{b} \\
\mathfrak{N} \mathfrak{b}
\end{array}$$