

$$\begin{array}{ccc}
\mathbb{T}^d \begin{array}{c} \triangleleft \\ \circ \\ \triangleleft \end{array} i\mathbb{R} \rtimes \mathbb{T}^d & \xrightarrow{\cong} & {}_d\mathbb{Z} \rtimes i\mathbb{R} \triangleleft \triangleleft {}_d\mathbb{Z} \\
\downarrow M \times C & & \downarrow \hat{M} \times \hat{C} \\
\mathcal{U} | \mathbb{T}^d \begin{array}{c} \triangleleft \\ \circ \\ \triangleleft \end{array} \mathbb{C} & \xrightarrow{\cong} & \mathcal{U} | {}_d\mathbb{Z} \begin{array}{c} \triangleleft \\ \circ \\ \triangleleft \end{array} \mathbb{C}
\end{array}$$

$$\begin{array}{ccc}
\mathbb{T}^d \begin{array}{c} \triangleleft \\ \circ \\ \triangleleft \end{array} \mathbb{C} & \xleftarrow[\alpha \delta \rtimes \zeta]{\ell_{\zeta}} & \mathbb{T}^d \begin{array}{c} \triangleleft \\ \circ \\ \triangleleft \end{array} \mathbb{C} \\
\downarrow \cong & & \downarrow \cong \\
{}_d\mathbb{Z} \begin{array}{c} \triangleleft \\ \circ \\ \triangleleft \end{array} \mathbb{C} & \xleftarrow[\alpha \delta \rtimes \zeta]{M_{\zeta}} & {}_d\mathbb{Z} \begin{array}{c} \triangleleft \\ \circ \\ \triangleleft \end{array} \mathbb{C}
\end{array}$$

$$\text{multiplicatrix } {}_d\mathbb{Z} \xrightarrow[\text{hom}]{M} \mathcal{U} | \mathbb{T}^d \begin{array}{c} \triangleleft \\ \circ \\ \triangleleft \end{array} \mathbb{C}$$

$$\zeta \overline{n \rtimes \gamma} = \zeta_n \zeta \gamma$$

$$\ell_{s^t} \gamma = \bar{s}^t \gamma \text{ convolutrix}$$