$$\underline{\mathfrak{h}}^{\mathbb{N}}\mathbb{C} \xleftarrow{\qquad\qquad} 2^{n|n}\mathbb{C}$$

$$\underline{\mathfrak{h}}^{\mathbb{N}}\mathbb{C} \ni \mathfrak{l}^J = \sum_{j \in J} \mathfrak{l}^j \quad \text{dual standard basis}$$

$$\mathfrak{l}^I \cdot \mathfrak{l}^J = \mathfrak{l}^{*I} \cdot \mathfrak{l}^J = \det \mathfrak{l}^i \cdot \mathfrak{l}^j = \det {}_i\eta^j = {}_I\eta^J = {}_I\mathring{\eta}^J$$

$$\mathfrak{l} \cdot {}_I\mathfrak{l} = \mathfrak{l}^I \, {}_I\eta^I$$

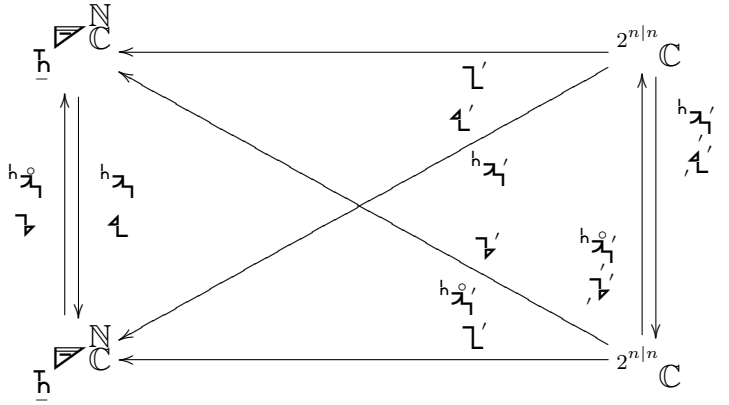
$$\mathfrak{l}^I = (\mathfrak{l} \cdot {}_I\mathfrak{l}) \, {}_I\eta^I$$

$$\ast\mathfrak{l}^I = \mathfrak{l}^{N \llcorner I} \, {}_{\overline{I > N \llcorner I}}{}_I\eta^I$$

$$\mathfrak{l}, \mathfrak{l} = \mathfrak{l}, \mathfrak{l} \, \underbrace{\mathfrak{l}', \mathfrak{l}}: \quad {}_M\mathfrak{l} \, \mathfrak{l}^N = \det\left({}_\mu\mathfrak{l}\mathfrak{l}^\nu\right) = \det {}_\mu\delta^\nu = {}_M\delta^N$$

$$\mathfrak{l}, \mathfrak{l} = \mathfrak{l}, \mathfrak{l} \, \underbrace{\mathfrak{l}', \mathfrak{l}}: \quad \mathfrak{l}^{*I} \, \mathfrak{l}^J = \det \mathfrak{l}^{*i} \, \mathfrak{l}^j = \det {}_i\delta^j = {}_I\delta^J = {}_I\mathfrak{l} \, \mathfrak{l}^J$$

$$\mathfrak{l}^{*I} = {}_I\mathfrak{l}$$



$$\mathfrak{l}^{*I} \underset{\mathfrak{h}}{\cdot} \mathfrak{l}^J = \begin{cases} \mathfrak{l}^{*I}\mathfrak{h}\mathfrak{l}^J & = {}^{\mathfrak{h}}\mathfrak{h}^{IJ} \\ \mathfrak{l}^{*I}\mathfrak{l}_{\mathfrak{h}}\mathfrak{l}^J & = {}_I\mathfrak{l}\mathfrak{l}_{\mathfrak{h}}\mathfrak{l}^J = \det \mathfrak{l}^i \underset{\mathfrak{h}}{\cdot} \mathfrak{l}^j = \det {}_I\mathfrak{l}^J_{\mathfrak{h}} = {}_I\mathfrak{l}^J_{\mathfrak{h}} \end{cases}$$

$$\mathfrak{l}^{\mathfrak{z}} \cdot {}_J\mathfrak{l} = \sum_{|I| = |J|} \mathfrak{l}^I \, {}^{\mathfrak{z}}_I\mathfrak{l}^J$$

$$\mathfrak{l}^J = \sum_{|I| = |J|} \left(\mathfrak{l}^{\mathfrak{z}} \cdot {}_I\mathfrak{l}\right) \, {}_I\mathfrak{l}^J_{\mathfrak{z}}$$

$$ {}_{M}\text{ˈ} \sum_{I} \text{ˈ}^{I} \; {}_{I}\tilde{\tilde{z}}^{J} = \sum_{I} {}_{M}\delta^{I} \; {}_{I}\tilde{\tilde{z}}^{J} = {}_{M}\tilde{\tilde{z}}^{J} = {}_{M}\text{ˈ} \; \overset{z}{\times} \; {}_{J}\text{ˈ} $$

$$ {}_{M}\text{ˈ}\;\text{ˈ}^{J} = {}_{M}\delta^{J} = \det {}_{M}\left({}_{z}{}^{z} \right)^{J} = \sum_{|I| = |J|} {}_{M}\,{}_{z}^{I} \; {}_{I}^{z}{}^{J} = \sum_{I} \left({}_{M}\text{ˈ} \times {}_{I}\text{ˈ} \right) {}_{I}^{z}{}^{J} $$

$$ \overset{z}{\times} \; {}_{I} = {}^{I} \; {}_{I}\eta^{I} $$

$$ \times\, {}^{I} = \left({}_{I} \right) \; {}_{I}\eta^{I} $$

$$ \bar{\mathbb{N}}\,\mathbb{C} \ni \begin{cases} {}^{J} & = {}_{9} \\ {}^{J} & = \underset{j \in J}{\times} {}^{j} = {}^{J} \end{cases} \quad \text{dual ONBasis} $$

$$ \begin{cases} & = {}^{I}\,{}_{I} \\ & = {}^{I}\,{}_{I} \end{cases} $$

$$ \begin{cases} {}^{I} \times {}^{J} = {}^{*I} \, {}^{J} = {}^{*I} \underbrace{\;\mathring{\eta}\;} {}^{J} = \underbrace{{}^{\overset{*}{I}}} \mathring{\eta} \underbrace{{}^{J}} & = \underbrace{{}^{\overset{*}{I}}}\;\cdots \\ {}^{I} \times {}^{J} = \det {}^{*i} \left(\overset{*}{}\,\eta \right) {}^{j} = \det \left(\overset{*}{}{}^{i} \right) \eta \left({}^{j} \right) = \det {}_{i}\overset{*}{}\,\eta\,{}^{j} = {}^{*I} \; {}^{J} = {}^{*I} \underbrace{\overset{*}{}\,\mathring{\eta}\;} {}^{J} = \underbrace{{}^{\overset{*}{I}}} \mathring{\eta} \underbrace{{}^{J}} & = \underbrace{{}^{\overset{*}{I}}}\;\cdots \end{cases} $$

$$ \underset{z}{\ast}\; {}^{I} = {}^{N \llcorner I} \; \overline{I > \underset{\circ}{N} \llcorner I} \; {}_{I}\eta^{I} $$

$$ \underset{z}{\ast}\; {}^{J} = \sum_{|I| = |J|} {}^{N \llcorner I} \; \overline{I > \underset{\circ}{N} \llcorner I} \; {}_{I}{}_{z}^{J} \left({}_{N}\eta^{N} / {}_{N}{}_{z}^{N} \right)^{1/2} $$

$$ {}^{N} = c \; {}^{N} $$

$$ {}_{N}\eta^{N} = {}^{N} \underset{z}{\times} {}^{N} = c^{2} \; {}^{N} \underset{z}{\times} {}^{N} = c^{2} \; {}_{N}{}_{z}^{N} \implies \text{LHS} = \sum_{I} \underbrace{{}_{I} \vDash {}^{N}} \; {}_{I}{}_{z}^{J} = \sum_{I} {}_{I} \vDash {}^{N} \left({}_{N}\eta^{N} / {}_{N}{}_{z}^{N} \right)^{1/2} {}_{I}{}_{z}^{J} = \text{RH} $$

$$ {}_{,} = \begin{cases} {}_{,}\mathring{} \underbrace{{}',} \\ {}_{,} \underbrace{{}',} \end{cases} $$

$$ {}_{I}\delta^{J} = \begin{cases} {}_{I}\mathring{}\;{}^{J} \\ {}_{I}\;{}^{J} \end{cases} $$

$$ {}_{,} = \begin{cases} {}_{,} \underbrace{\mathring{}',} \\ {}_{,} \underbrace{{}',} \end{cases} $$

$$ {}_{M}\delta^{N} = \begin{cases} {}_{M}\mathring{}\;{}^{N} \\ {}_{M}\;{}^{N} \end{cases} $$

$$\begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases}$$

$$\begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases}$$

$$\begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases}$$

$$\begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases}$$

$$\begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases}$$

$$\begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases}$$

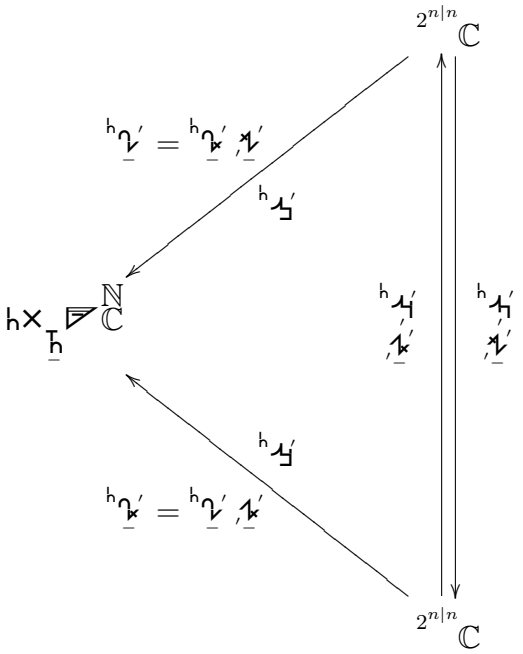
$$\begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases}$$

$$\begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases}$$

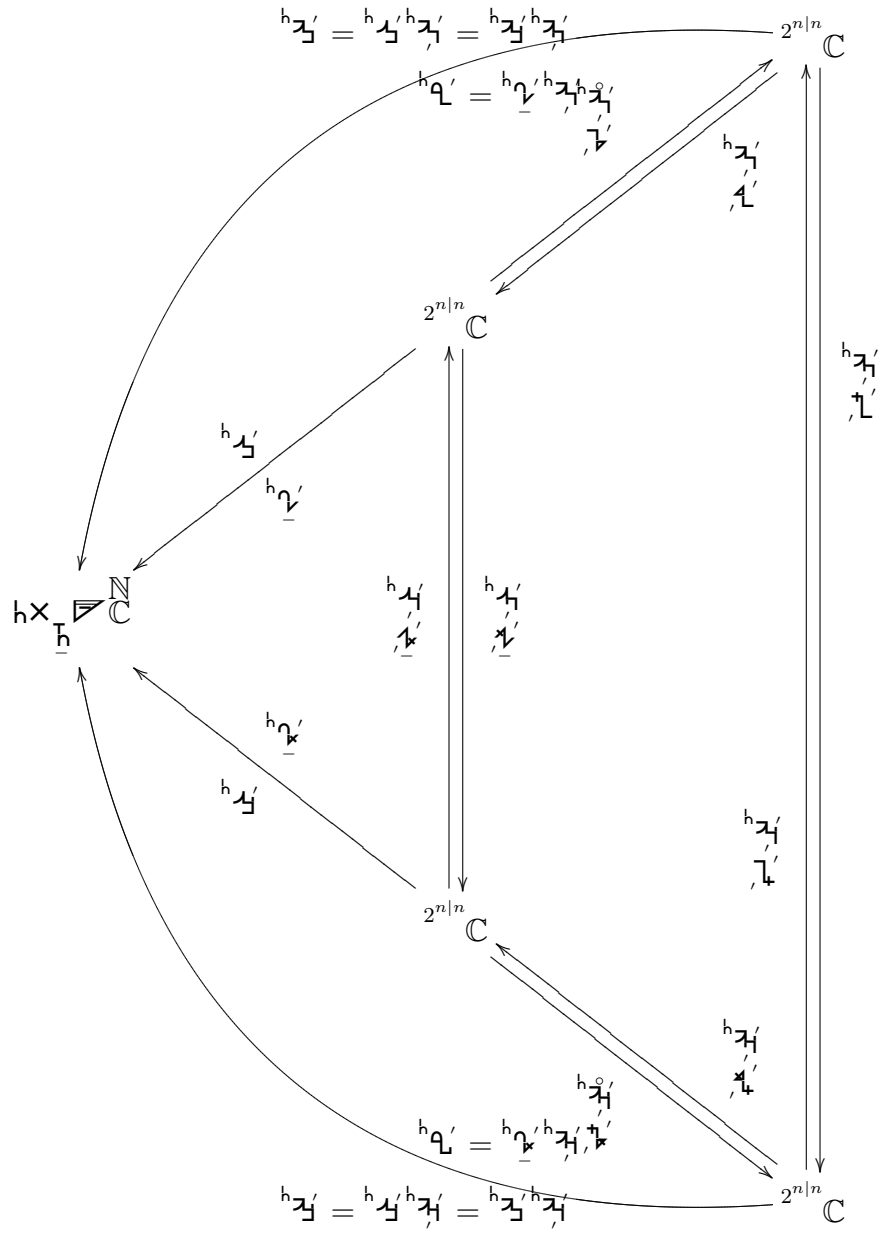
$$\begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases}$$

$$\begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases}$$

$$\begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases} = \begin{cases} \\ \end{cases}$$



holonomic basis



$$\mathbb{C}^{\mathbb{N}} \ni \begin{cases} e^J \\ e^J = \sum_{j \in J} e^j \end{cases} \text{ dual ONbasis}$$

$$e^I \cdot e^J = \eta^{IJ}$$

$$\sum_I \lambda_I e_I = \eta^I e_I$$

$$e^I = \left(\sum_I \lambda_I e_I \right) \eta^I$$

$$\ast \, {}^{h}\mathbb{Q}^{I} = {}^{h}\mathbb{Q}^{N \llcorner I} \, \overline{I > \overset{\circ}{N} \llcorner I} \, {}_{I}\eta^{I}$$

$$_{,}\mathbb{1} = \begin{cases} {}^{h}_{,}\mathbb{Z}^{h}_{,}\underbrace{\mathbb{1}} \\ {}_{,}\mathbb{G}_{h}\underbrace{{}^{h}\mathbb{Q}^{\prime}_{,}\mathbb{1}} \end{cases}$$

$${}_{I}\delta^{J} = \begin{cases} {}^{h}_{I}\mathbb{Z}^{h}\mathbb{Z}^{J} \\ {}_{I}\mathbb{G}_{h}{}^{h}\mathbb{Q}^{J} \end{cases}$$

$$\begin{cases} {}^{h}\mathbb{Z}^{\prime}_{,}\mathbb{1} = {}^{h}\underline{\mathbb{2}}^{\prime}\underbrace{{}^{h}\mathbb{Z}^{\prime}_{,}\mathbb{1}} \\ {}^{h}\mathbb{Q}^{\prime}_{,}\mathbb{1} = {}^{h}\underline{\mathbb{2}}^{\prime}\underbrace{{}_{,}\mathbb{4}^{\prime}_{,}\mathbb{1}} \end{cases} \begin{cases} {}^{h}\mathbb{Z}^{J} = \underline{\mathbb{2}}^{L}_{h}{}^{h}\mathbb{Z}^{J}_{L} \\ {}^{h}\mathbb{Q}^{J} = {}^{h}\underline{\mathbb{2}}^{L}{}_{L}\mathbb{4}^{J} \end{cases}$$

$${}^{h}\underline{\mathbb{2}}^{\prime}{}_{,}\mathbb{1} = \begin{cases} {}^{h}\mathbb{Z}^{\prime}\underbrace{{}^{h}\overset{\circ}{\mathbb{Z}}^{\prime}_{,}\mathbb{1}} \\ {}^{h}\mathbb{Q}^{\prime}\underbrace{{}_{,}\mathbb{4}^{\prime}_{,}\mathbb{1}} \end{cases}$$

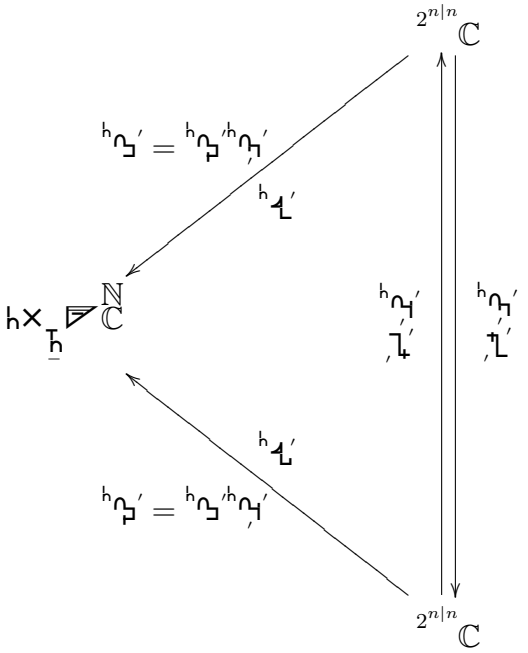
$${}^{h}\underline{\mathbb{2}}^{N} = \begin{cases} {}^{h}\mathbb{Z}^{K}{}^{h}_{K}\overset{\circ}{\mathbb{Z}}^{N} \\ {}^{h}\mathbb{Q}^{K}{}_{K}\mathbb{4}^{N} \end{cases}$$

$$\begin{cases} {}^{h}\mathbb{Z}^{\prime}_{,}\mathbb{1} = {}_{,}\underline{\mathbb{1}}_{h}\underbrace{{}^{h}\mathbb{Z}^{\prime}_{,}\mathbb{1}} \\ {}_{,}\mathbb{4}^{\prime}_{,}\mathbb{1} = {}_{,}\underline{\mathbb{1}}_{h}\underbrace{{}^{h}\mathbb{Q}^{\prime}_{,}\mathbb{1}} \end{cases}$$

$$\begin{cases} {}^{h}_{M}\mathbb{Z}^{J} = {}_{M}\underline{\mathbb{1}}_{h}{}^{h}\mathbb{Z}^{J} \\ {}_{M}\mathbb{4}^{J} = {}_{M}\underline{\mathbb{1}}_{h}{}^{h}\mathbb{Q}^{J} \end{cases}$$

$$\begin{cases} {}^{h}\overset{\circ}{\mathbb{Z}}^{\prime}_{,}\mathbb{1} = {}^{h}_{,}\mathbb{Z}^{h}\underline{\mathbb{2}}^{\prime}_{,}\mathbb{1} \\ {}_{,}\mathbb{4}^{\prime}_{,}\mathbb{1} = {}_{,}\mathbb{G}_{h}\underbrace{{}^{h}\underline{\mathbb{2}}^{\prime}_{,}\mathbb{1}} \end{cases}$$

$$\begin{cases} {}^{h}_{I}\overset{\circ}{\mathbb{Z}}^{N} = {}^{h}_{I}\mathbb{Z}^{h}\underline{\mathbb{2}}^{N} \\ {}_{I}\mathbb{4}^{N} = {}_{I}\mathbb{G}_{h}{}^{h}\underline{\mathbb{2}}^{N} \end{cases}$$


$2^{n|n}\mathbb{C}$
$\mathbb{N}$
$\mathbb{C}$
$2^{n|n}\mathbb{C}$