

Tensors

Rank 2 (matrix)

`\tensorII{name}{left index}{right index}`

$$\alpha \begin{array}{c} \boxed{A} \\ \hline \end{array} \beta$$

Rank 3

`\tensorIII{name}{physical index}{left index}{right index}`

$$\begin{array}{c} i \\ | \\ j \text{---} \boxed{\Gamma} \text{---} k \end{array}$$

Rank 4

`\tensorIV{name}{physical index 1}{physical index 2}{left index}{right index}`

$$\begin{array}{c} i \quad j \\ | \quad | \\ k \text{---} \boxed{\theta} \text{---} l \end{array}$$

These figures also work in a math environment, as seen below.

$$\begin{array}{c} j \quad k \\ | \quad | \\ \alpha \text{---} \boxed{\theta} \text{---} \beta \end{array} = \begin{array}{c} j \\ | \\ \alpha \text{---} \boxed{\Gamma^A} \text{---} \gamma \end{array} + \begin{array}{c} k \\ | \\ \gamma \text{---} \boxed{\Gamma^B} \text{---} \beta \end{array} \quad (1)$$

Matrix Product States

An MPS can be drawn using

`\mps{name}{length}{physical index}{left index}{right index}`

$$\begin{array}{c} \sigma_1 \quad \sigma_2 \quad \sigma_3 \quad \sigma_4 \\ | \quad | \quad | \quad | \\ \alpha \text{---} \boxed{A^1} \text{---} \boxed{A^2} \text{---} \boxed{A^3} \text{---} \boxed{A^4} \text{---} \beta \end{array}$$

Similarly, the Vidal canonical form of an MPS can be drawn with `\mpsVidal{name rank 3}{name singular values}{length}{physical index}{left index}{right index}`

$$\begin{array}{c} \sigma_1 \quad \sigma_2 \quad \sigma_3 \quad \sigma_\Lambda \\ | \quad | \quad | \quad | \\ \alpha \text{---} \boxed{\Gamma^1} \text{---} \boxed{\Lambda^1} \text{---} \boxed{\Gamma^2} \text{---} \boxed{\Lambda^2} \text{---} \boxed{\Gamma^3} \text{---} \boxed{\Lambda^3} \text{---} \boxed{\Gamma^4} \text{---} \beta \end{array}$$