

Tensors

Rank 2 (matrix)

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

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

Rank 3

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

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

Rank 4

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

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

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

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

Matrix Product States

An MPS can be drawn using

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

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

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}`

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