

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}`

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

Rank 4

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

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

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

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

Matrix Product States

An MPS can be drawn using

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

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

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}`

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