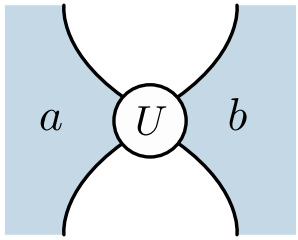
Complex Hadamard matrix

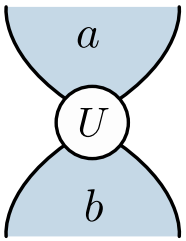
- A biunitary with two opposite shaded regions

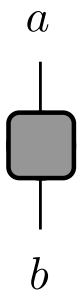
$U_{ab} =$ 

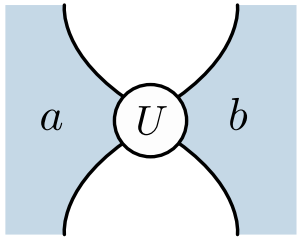
- Corresponds to a complex Hadamard matrix

$$U^\dagger U = U U^\dagger = q\,\mathbb{1} \qquad \text{and} \qquad |U_{ab}| = 1, \forall a, b$$

- Represents either **one-site unitary** or **two-site controlled phase**



$=$ 

or 

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