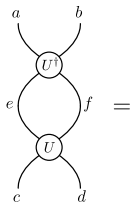


# Dual-unitarity from biunitarity

- A biunitary without any shading corresponds to a **dual-unitary gate**

**Vertical unitarity:**



$$\sum_{e,f=1}^q U_{ab,ef}^\dagger U_{ef,cd} = \delta_{ac} \delta_{bd}$$

**Horizontal unitarity:**

