

(18)

ie, $A_{nm} = A_{mn}^* = -A_{mn}$
 which implies $A_{n,m} = 0$, then $A_{m,n} = 0$
 so the space consists of matrices
 of form

$$A = \begin{bmatrix} A_{mm} & 0 \\ 0 & A_{nn} \end{bmatrix}$$

with A_{mm}, A_{nn} skew hermitian
 $m \times m$ and $n \times n$ matrices respectively,
 where $\text{Tr } A = 0$.

$$\begin{aligned} \dim A &= \dim A_{mm} + \dim A_{nn} - 1 \\ &\quad (\text{since } \text{Tr } A = 0) \\ &= m^2 + n^2 - 1. \end{aligned}$$

(8)