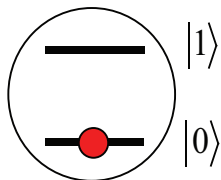
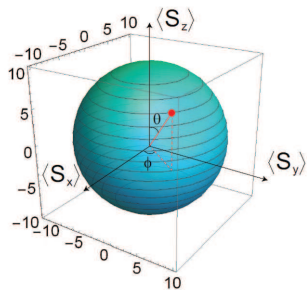


## Qubit quantum computation

Hilbert space:



State visualization:

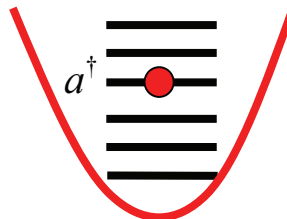


Elementary state:  $|\psi\rangle \equiv \alpha|0\rangle + \beta|1\rangle$

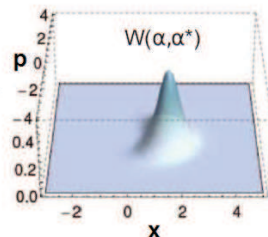
Elementary operators:  $\sigma^x, \sigma^y, \sigma^z$

## Continuous variables quantum computation

Hilbert space:



State visualization:

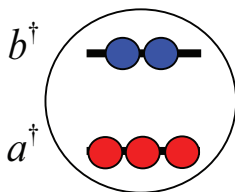


Elementary state:  $|\alpha\rangle = e^{-|\alpha|^2/2} e^{a\alpha^\dagger} |0\rangle$

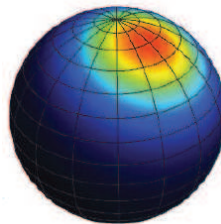
Elementary operators:  $x = (a + a^\dagger) / 2$   
 $p = (a - a^\dagger) / 2$

## Spinor quantum computation

Hilbert space:



State visualization:



Elementary state:  $|\alpha, \beta\rangle \equiv \frac{1}{\sqrt{N!}} (\alpha a^\dagger + \beta b^\dagger)^N |0\rangle$

Elementary operators:  $S^x = a^\dagger b + b^\dagger a$   
 $S^y = -ia^\dagger b + ib^\dagger a$   
 $S^z = a^\dagger a - b^\dagger b$