

## 1 Dimensional Analysis of Kets

- (a)  $\langle \Psi | \Psi \rangle = 1$  Identify and discuss the dimensions of  $|\Psi\rangle$ .
- (b) For a spin- $\frac{1}{2}$  system,  $\langle \Psi | + \rangle \langle + | \Psi \rangle + \langle \Psi | - \rangle \langle - | \Psi \rangle = 1$ . Identify and discuss the dimensions of  $|+\rangle$  and  $|-\rangle$ .
- (c) In the position basis  $\int \langle \Psi | x \rangle \langle x | \Psi \rangle dx = 1$ . Identify and discuss the dimensions of  $|x\rangle$ .