

AMO Seminar today @ 3:30 pm in room 122: topic = Rydberg atom quantum sensors

Quiz on Thursday (Sept. 24, this week)

Important formulas for X & P representations

Spatial translation operator $T(\Delta x)$

Momentum boost operator $B(\Delta p)$ see S&N questions 1.34, 1.36
"Momentum translation"

Momentum operator P in the $\{|x\rangle\}$ basis

Momentum eigenket in the x -representation $\langle x|p\rangle = \psi_p(x)$

Orthonormality conditions: $\langle x|x'\rangle = ?$
 $\langle p|p'\rangle = ?$

Dirac Delta & Fourier transforms: $\int_{-\infty}^{+\infty} e^{ik(x-x')} dk = 2\pi \delta(x-x')$

Converting between X & P representations:

$$\langle x|\psi\rangle = \psi(x) \longleftrightarrow \langle p|\psi\rangle = \psi(p)$$

conversion
formulas
"Fourier transforms"

Identity operator in X & P representations