

Due: Monday, 10/13, 2:10pm, PHYS360 Assignment 6

Reading:

1. Griffiths, Ch.3, pg. 93-114. Prepare for Reading Quiz: Monday 10/13, questions on anything in Griffiths, pages 93- 114, but especially:

a) be able to show that momentum operator is hermitian, pg 97

b) be able to find eigenfunctions and eigenvalues of the position operator, pg 104

c) be able to show $\sum_n |c_n|^2 = 1$, pg. 107

d) be able to show $\langle Q \rangle = \sum_n q_n |c_n|^2$, pg 107

e) be able to prove $\sigma_A^2 \sigma_B^2 \geq \left(\frac{1}{2i} \langle [\hat{A}\hat{B}] \rangle \right)^2$, pg 111

f) be able to define terms:

Hilbert Space

Hermitian Operator

Observable

Determinate state

Eigenfunction

Eigenvalue

Spectrum

Momentum space wavefunction

Incompatible observables

Problems:

1. Problem 3.2, pg 96
2. Problem 3.5, pg 98
3. Problem 3.6, pg 100
4. Problem 3.7, pg 102
5. Problem 3.9, pg 105
6. Problem 3.13, pg 112

Q: quick review: Write down the hermitian adjoint, \mathbf{A}^\dagger

$$\mathbf{A} = \begin{pmatrix} -1 & 1 & i \\ 2 & 0 & 3 \\ 2i & -2i & 2 \end{pmatrix}$$