Problem Set 6

Brandon Henke[1]

[1]*Michigan State University - Department of Physics & Astronomy*

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I TIME-DEPENDENCE OF SPIN OPERATORS IN HEISENBERG PICTURE

A

$$\dot{\hat{S}} = \frac{1}{i\hbar}[\hat{S}, \hat{H}], \tag{I.1}$$

$$= \frac{\omega\hbar}{4i}[\hat{\sigma}, \hat{\sigma}_3], \tag{I.2}$$

$$= \frac{\omega\hbar}{4}\left(-2\hat{\sigma}_2 + 2\hat{\sigma}_1 + 0\right), \tag{I.3}$$

$$= \frac{\omega\hbar}{2}\left(-\hat{\sigma}_2 + \hat{\sigma}_1\right) \tag{I.4}$$

B

C

II QUANTUM VIRIAL THEOREM

A

B

C

III SAKURAI 2.17: SIMPLE HARMONIC OSCILLATOR IN MOMENTUM SPACE

A

B

C

IV UNCERTAINTY RELATION FOR EIGENSTATES OF THE SIMPLE HARMONIC OSCILLATOR

V TIME-DEPENDENCE OF SIMPLE HARMONIC OSCILLATOR STATES

A

B

C