

Physics 7502: Homework Set No. 7

Due date: Tuesday, March 8, 2016, 5:00pm
in PRB M2039 (Bowen Shi's office)

Total point value of set: 50 points

Problem 1 (10 pts.):

If $\hat{H}(\lambda)$ has eigenvector $|\psi_n(\lambda)\rangle$, prove the *Hellmann-Feynman Theorem*

$$\frac{dE_n(\lambda)}{d\lambda} = \left\langle \psi_n(\lambda) \left| \frac{\partial \hat{H}}{\partial \lambda} \right| \psi_n(\lambda) \right\rangle.$$

Problem 2 (20 pts.): Exercise 17.3.2 (Shankar, p. 466)

Problem 3 (20 pts.): Exercise 17.3.4 (Shankar, p. 470)