

HW assignment 1

1

Due Thu Jan 29 at the lecture.

Problem 1.

Prove that \hat{L}_i commutes with the Hamiltonian $\frac{\hat{p}^2}{2m} + V(\hat{r})$ for spherically symmetric potentials.

Problem 2.

Suppose the potential depends only on $x = r_1$ so that $V = V(x)$. Find commutators $[\hat{L}_i, V(\hat{x})]$.

Note: here “hat” denotes the operator rather than unit vector in the corresponding direction.