

Recitation #11
Quantum 521

1. When you look in a mirror, your left and right side are reversed. Why is your image also not flipped up and down? Show that parity is the same as mirror reflection in the x-y plane followed by a rotation by 180° about the z-axis. Since the weak interaction is rotationally invariant, violation of mirror reflection implies violation of parity.
2. Suppose that in a reaction the electron is produced with spin always parallel to its momentum. Argue that parity is violated.
3. A particle is in the periodic potential, $V(x) = V_0 \sin(2\pi x/a)$. Is momentum conserved?