Topics in Modern Physics Illinois Mathematics & Science Academy
Chapter 27-4 Problem Set Quantum Physics
Dual Nature of Light and Matter

27.34 Calculate the de Broglie wavelength of a proton moving at $2x10^4$m/s and then $2x10^7$m/s.

23.36 A .200-kg ball is released from rest at the top of a 50.0m tall building. Find the de Broglie wavelength of the ball just before it strikes the ground.

Uncertainty

27.42 A 50.0g ball moves at 30.0m/s. If its speed is measured to an accuracy of .10%, what is the minimum uncertainty?

27.43 In the ground state of hydrogen, the uncertainty in the position of the electron is roughly .010nm. If the speed of the electron is on the order of the uncertainty in its speed, how fast is the electron moving?