Keystone - Chapter 23: Electromagnetic Radiation

A positive charge coasts upward at a constant velocity for a long time. Then at $t = 0$ a force acts downward on it for 1 ns (10^{-9}s); then it coasts upward at a smaller constant speed for 1 ns; then a force acts upward for 1 ns and it resumes its original speed. The new position reached at $t = 3$ ns is much less than a millimeter from the original position.
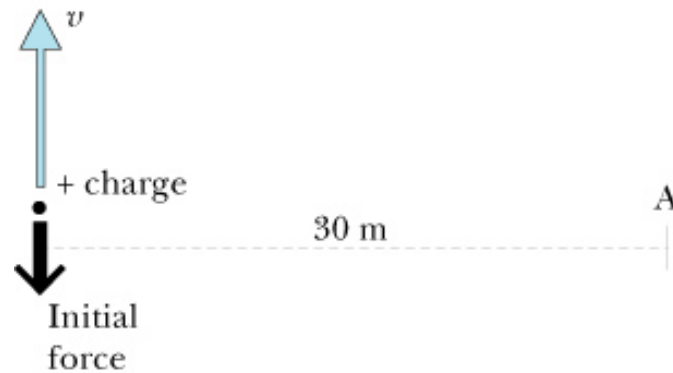

Figure 1: A decelerated positive charge.

You stand at location A, 30 meters to the right of the charge, with instruments for measuring electric and magnetic fields. What will you observe due to the motion of the positive charge, at what times? You do not need to calculate the magnitudes of the electric and magnetic fields, but you do need to specify their directions, and the times when these fields are observed.

This problem is 23.P.23 from M&I vol 2, second edition.