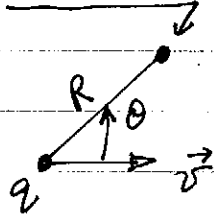


## Problems Electrodynamics III

Due Mar 21<sup>st</sup> @ 1pm

- ① • Find the scalar potential of a point charge moving with constant velocity  $\vec{v}$

$$\varphi(R, \theta, t) - ?$$



- Show that the result approaches the one found in electrostatics for non-relativistic velocities ( $v \ll c$ ).
- Determine the vector potential for the same configuration

$$\vec{A}(R, \theta, t) - ?$$

- ② An electron moving initially at constant speed  $v_0 \ll c$  on a straight line is brought to rest with uniform deceleration  $a$  lasting for a time  $t = v/a$ .

- Determine the electromagnetic energy radiated during the deceleration.
- Compare radiated energy with electron's initial kinetic energy.