

Potentials in frame S

L.T. $\frac{V}{c} = A^0 = \gamma(A'^0 + \beta A'^1) = \gamma A'^0$

$$= \frac{q\gamma}{4\pi\epsilon_0 c R'} = \frac{q}{4\pi\epsilon_0 c} \gamma \frac{1}{\left[(\gamma[x' - \beta x^0])^2 + (x^2)^2 + (x^3)^2 \right]^{1/2}} \quad (14.2)$$

$$A^1 = \gamma(\beta A'^0 + A'^1) = \gamma\beta A'^0 = \beta A^0 = \frac{q\gamma\beta}{4\pi\epsilon_0 c R'} \quad (14.3)$$

$$A^2 = A^3 = 0$$

Exercise: Verify that $A'^{\mu} A'_{\mu} = A^{\mu} A_{\mu}$