With your groupmates, discuss and answer the following, and write down your answer.

What is an asymptotic potential, and what do we use it to calculate?

Which of the following is *not* true in the asymptotic regime?

A. $|\vec{x} - \vec{x}'| \approx |\vec{x}| \equiv r$

B. $t' \approx t$

C. $t' \approx t - \frac{r}{c}$

D. $\frac{\partial t'}{\partial t} \approx 1$

E. $\frac{\partial x'}{\partial t} \ll c$

We use the Lorenz gauge condition $\nabla \cdot \vec{A} = -\mu_0 \varepsilon_0 \frac{\partial V}{\partial t}$ and the asymptotic potential $\vec{A}$ to get the asymptotic version of V.

But using that gauge condition doesn't get *all* of V; it just gets the part of V that has nonzero time derivative (which, in practice, is the time-dependent part of V).

I claim this is not a bad thing in this context, that only the time dependent part of V matters. Talk to your group and justify this claim.