WebAssign
CH14-HW02-FALL2010 (Homework)

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PHYS 272-FALL 2012, Fall 2012
Instructor: Virendra Saxena

Current Score : 15 / 15 **Due :** Tuesday, September 4 2012 11:59 PM EDT

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1. 1/1 points | Previous Answers MI3 14.4.X.028

What is the electric field at a location $\vec{b}$ = <-0.5, -0.4, 0> m, due to a particle with charge +4 nC located at the origin?

$\vec{E}$ = ✓ N/C

- *Read the eBook*
- Section 14.4

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2. 6/6 points | Previous Answers MI3 14.4.P.041

You want to create an electric field $\vec{E}$ = < 0, 3×10^4,0 > N/C at location < 0, 0, 0>.

Where would you place a proton to produce this field at the origin?
< 0 ✓ , -2.19e-7 ✓ , 0 ✓ , > m
Instead of a proton, where would you place an electron to produce this field at the origin?
< 0 ✓ , 2.19e-7 ✓ , 0 ✓ , > m
(Hint: This problem will be much easier if you draw a diagram.)

- *Read the eBook*
- Section 14.4

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3. 4/4 points | Previous Answers MI3 14.4.P.042

A $\pi-$ ("pi-minus") particle, which has charge $-e$, is at location < 5.00×10^{-9}, -5.00×10^{-9}, -2.00×10^{-9} > m. What is the electric field at location < -5.00×10^{-9}, 2.00×10^{-9}, 4.00×10^{-9} > m, due to the $\pi-$ particle?

$\vec{E}$ = ✓ newton/coulomb ✓

An antiproton (same mass as the proton, charge $-e$) is at the observation location. What is the force on the antiproton, due to the $\pi-$?

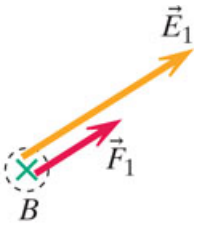
$\vec{F}$ = ✓ newton ✓

- *Read the eBook*
- Section 14.4

4. 4/4 points | Previous Answers MI3 14.4.X.032

Lithium nucleus affected by an electric field

A proton at location *A* makes an electric field $\vec{E}_1$ at location *B*. A different proton, placed at location *B*, experiences a force $\vec{F}_1$.



If $|\vec{E}_1|$ = 700 N/C, what is $|\vec{F}_1|$?

$|\vec{F}_1|$ = 1.12e-16 ✓ N

Now the proton at *B* is removed and replaced by a lithium nucleus, containing three protons and four neutrons. The proton at location *A* remains in place.
What is the magnitude of the electric force on the lithium nucleus?

$|\vec{F}_{\text{on Li}}|$ = 3.36e-16 ✓ N

Now the Lithium nucleus is removed, and an electron is placed at location *B*. The proton at location *A* remains in place. What is the magnitude of the electric force on the electron?

$|\vec{F}_{\text{on e}^-}|$ = 1.12e-16 ✓ N

Which arrow below best indicates the direction of the force on the electron due to the electric field?

f ✓

j zero magnitude

- *Read the eBook*
- Section 14.4