

PHY 482 Homework Assignment #4 due Wed Feb 5

/1/ Exercise 10.13.

/2/ Exercise 10.14.

/3/ Exercise 10.19.

/4/ Exercise 10.21.

/5/ Exercise 10.22.

/6/ Exercise 10.23.

/7/ Exercise 10.29.

/8/ Consider these betatron parameters:

Electron energy $E = 6 \text{ MeV}$

Electron momentum $pc = 5.97 \text{ MeV}$ (use relativistic kinematics)

Radius = 10 cm

Calculate the final magnetic flux through the area πr_0^2 .

/9/ For times $t < 0$, the switch is open, as shown. For times $t \geq 0$ the switch is closed.

(a) Determine the current $I(t)$ around the circuit for $t \geq 0$.

(b) Now suppose $R = 10$ and $L = 0.025 \text{ H}$. Calculate the time when I is 90% of its final value, $I(t) = 0.9 E/R$. Express the answer in milliseconds.

