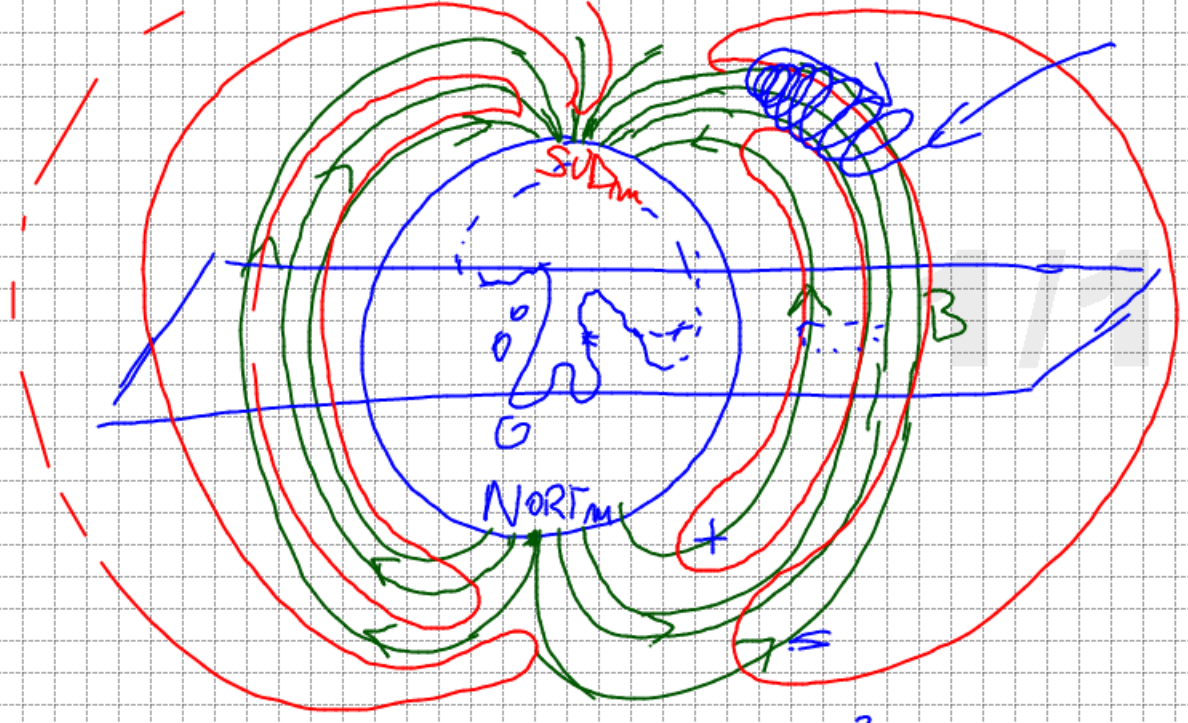

$F_L = qvB \qquad F_C = m\frac{v^2}{r} \qquad qvB = m\frac{v^2}{r}$

$$r = \frac{mv}{qB}$$

PROTONI: $(m_0)_p \simeq 940\ MeV = 940 \times 10^6 \times 1{,}6 \times 10^{-19}\ J$ (mega (10^6); MeV: elettronvolt)

$1\ eV = 1{,}6 \times 10^{-19}\ J$

$(m_p) = 1{,}5\,(m_0)_p$

$$\gamma = \frac{(m_0)_p}{\sqrt{1-\beta^2}} \qquad \text{con } \beta = \frac{v_p}{c}$$

$$\frac{(m_0)_p}{\sqrt{1-\beta^2}} = 1{,}5\,(m_0)_p$$

$$\frac{(m_0)_p}{\sqrt{1-\beta^2}} = 1{,}5\,(m_0)_p \qquad \frac{1}{\sqrt{1-\beta^2}} = 1{,}5$$

$$\sqrt{1-\beta^2} = \frac{1}{1{,}5} \qquad 1-\beta^2 = \left(\frac{1}{1{,}5}\right)^2$$

$$\beta^2 = 1 - \left(\frac{1}{1{,}5}\right)^2 \qquad \beta = 0{,}74 \simeq 74\%\ \text{della velocità della luce}$$

$$\beta^2 = 1 - \left(\frac{2}{3}\right)^2 \Rightarrow \beta^2 = 1 - \frac{4}{9} \qquad \beta^2 = \frac{5}{9}$$

$$r = \frac{m_p v}{qB} = \frac{1{,}67 \times 10^{-27}\,kg \times 0{,}74 \times 3 \times 10^8\,\frac{m}{s}}{1{,}6 \times 10^{-19}\,C \cdot 3 \times 10^{-5}\,T} =$$

$$= 0{,}77 \times 10^5\,m = 77\,km$$

ELETTRONE:

$$(m)_e = 3\,(m_0)_e$$

$r \simeq 53\,m$ in realtà $r \simeq 100\,m$