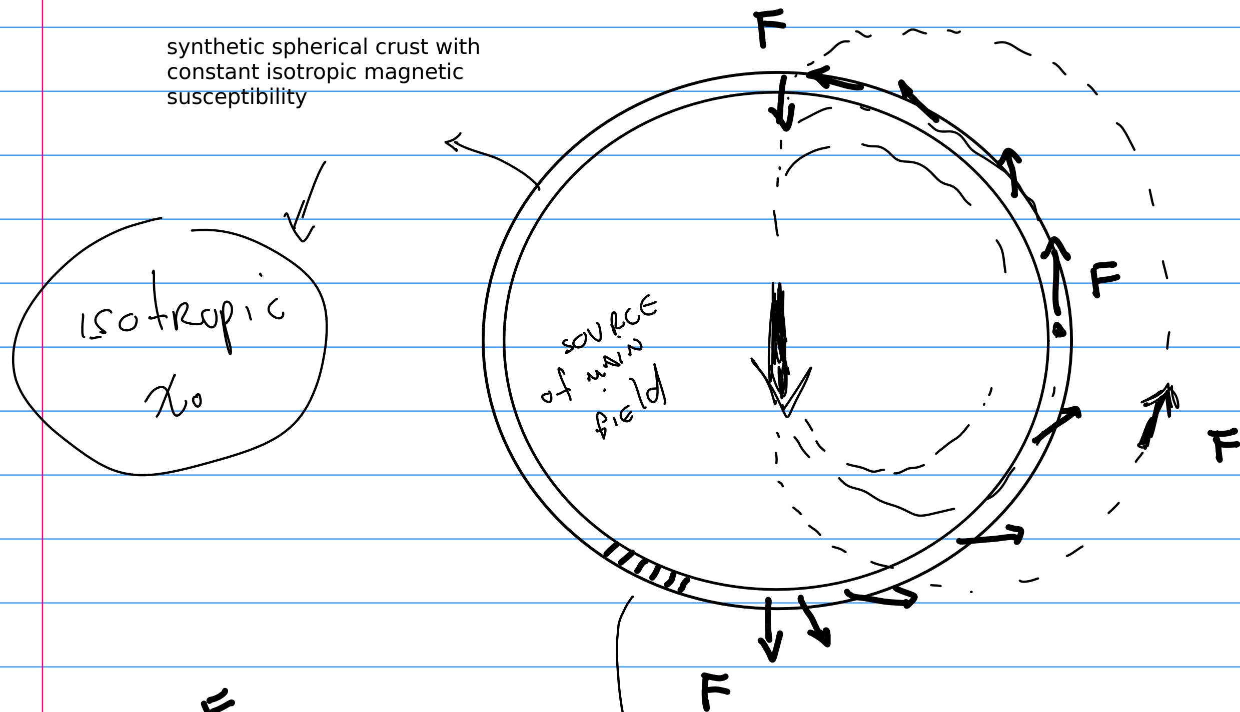

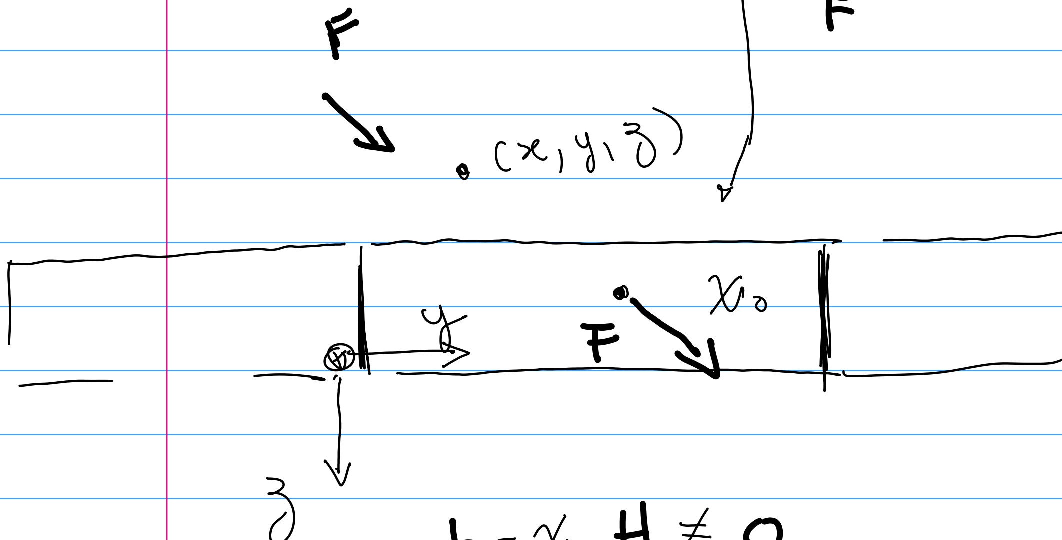

$F(x, y, z)$

$B(x, y, z) = 0$

(Runcorn theorem)

$$\mathbf{h} = \chi_0 \mathbf{H} \neq 0$$

$$\mathbf{F}/\mu_0$$

$$\mathbf{B}(x, y, z) = C_m \iiint_{v_c} \nabla^2 \frac{1}{r} (\chi_0 \mathbf{H})\, dv = 0$$

$$\chi = \chi_0 + \Delta\chi$$

$$B(x,y,z) =$$

$$= \cancel{C_m \chi_0 \iiint_{v_c} \nabla^2 \frac{1}{r} \mathbf{H} \, dv} + C_m \Delta\chi \iiint_{v_c} \nabla^2 \frac{1}{r} \mathbf{H} \, dv$$

$= 0$ (RUNCORN) $\qquad \neq 0$

$$\mathbf{h} = \boldsymbol{\chi} \mathbf{H} + \mathbf{P} \qquad \boldsymbol{\chi} = \chi_0 \mathbf{I} + \boldsymbol{\Delta\chi}$$

$$= (\chi_0 \mathbf{I} + \boldsymbol{\Delta\chi}) \mathbf{H} + \mathbf{P}$$

$$\mathbf{h}^* = \boldsymbol{\Delta\chi} \mathbf{H} + \mathbf{P}$$

$$\mathbf{B}(x,y,z) = C_m \iiint_{v_c} \nabla^2 \frac{1}{r} \left(\boldsymbol{\Delta\chi} \mathbf{H} + \mathbf{P} \right) dv$$

Runcorn Theorem, in: David Gubbins, Emilio Herrero-Bervera (eds.), Encyclopedia of Geomagnetism and Paleomagnetism, 2007, Springer, p. 888
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