

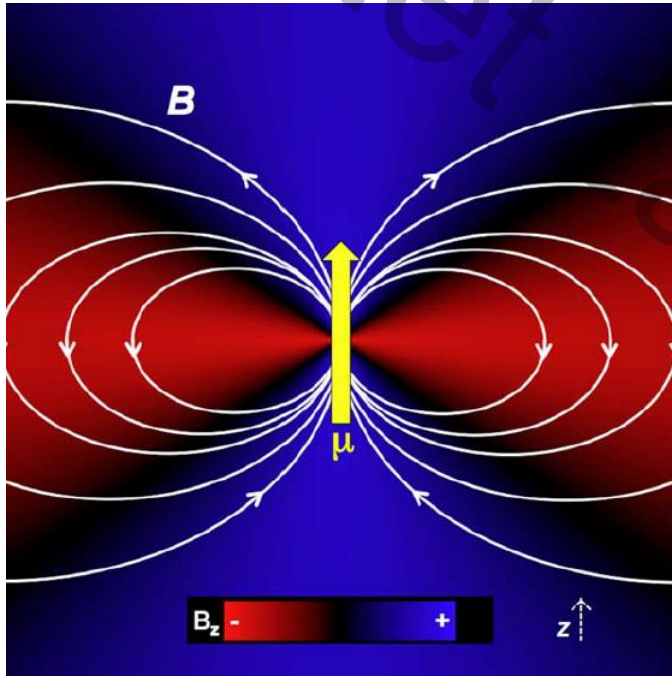
Безбедност на МРИ

SAFETY FIRST



Потенцијални ризици потичу од:

- Главног магнетног поља
- Градијентних завојница
- РФ поља



$$F_{trans} = \mu_m \cdot \nabla B_0$$

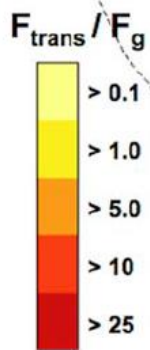
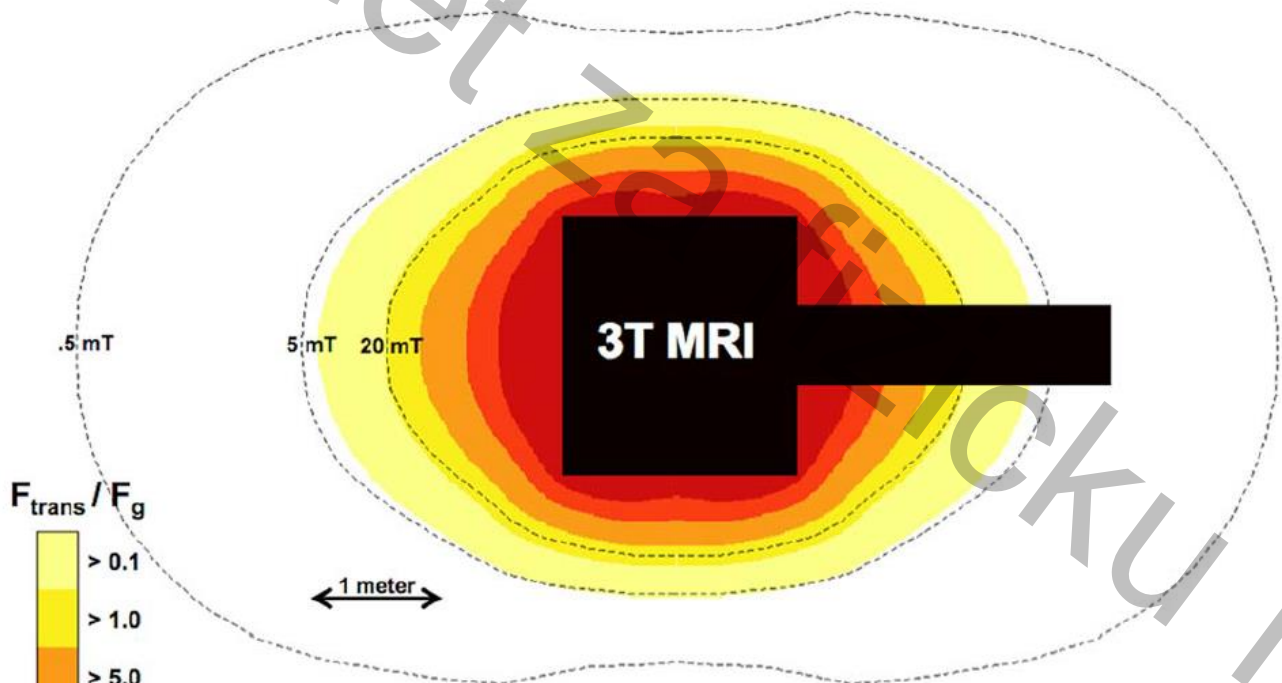
$$\frac{F_{trans}}{F_g} = CX B_0 |\nabla B_0|, \quad C = \frac{1}{(\mu_0 g) \rho}$$

$$\frac{F_{trans}}{F_g} = C B_s |\nabla B_0|$$

$$\frac{F_{trans}}{F_g} = C \frac{X}{(1+DX)} B_0 |\nabla B_0|, \quad (\text{non saturated ferromagnetic objects})$$



Факултет



$$T = \mu_m \times B$$

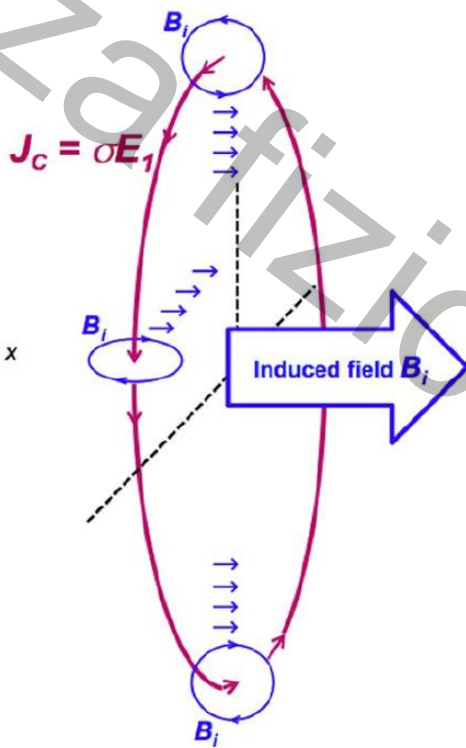
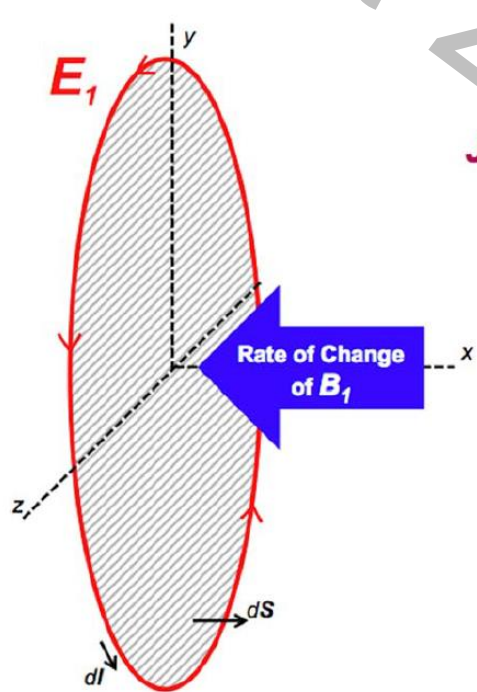
1 mT = 10 Gauss

$$\frac{F_{torque}^{max}}{F_{trans}^{max}} = \frac{(B_0)_{max}}{L |\nabla B_0|_{max}}, \text{ (saturated elongated object)}$$



Факултет Загребски хемички

$$F_L = q(\mathbf{v} \times \mathbf{B})$$



$$\oint_c \mathbf{E} \cdot d\mathbf{l} = - \iint_S \frac{\partial \mathbf{B}}{\partial t} \cdot d\mathbf{S},$$

$$SAR = \sigma E_p^2 / 2\rho \text{ (Watts/kg)}$$

$$E_p = \pi f B_p R$$

$$SAR = (\sigma / 2\rho) (\pi f B_p R)^2$$

$$\oint_c \mathbf{B} \cdot d\mathbf{l} = \iint_S \mu \mathbf{J} \cdot d\mathbf{S}, \quad \mathbf{J} = \mathbf{J}_C + \mathbf{J}_D = \sigma \mathbf{E} + \varepsilon \frac{\partial \mathbf{E}}{\partial t}$$

