

Jaroslav Tóbik

Zadanie úlohy

8. **Ďalšia magnetická levitácia**

Položte veľký magnet v tvare disku na nemagnetickú vodivú platňu. Keď pod platňou pohybujete menším magnetom, vrchný magnet sa za istých okolností môže začať vznášať. Preskúmajte vznášanie a možný pohyb vrchného magnetu.

													DISPLAY PROPERTY/TREND													
													Chemical Group Block													
1 H Hydrogen Nonmetal	2												13	14	15	16	17	2 He Helium Noble Gas								
3 Li Lithium Alkali Metal	4 Be Beryllium Alkaline Ea...	Atomic Number										17 Cl Chlorine Halogen	5 B Boron Metalloid	6 C Carbon Nonmetal	7 N Nitrogen Nonmetal	8 O Oxygen Nonmetal	9 F Fluorine Halogen	10 Ne Neon Noble Gas								
											Name							Chemical Group Block								
11 Na Sodium Alkali Metal	12 Mg Magnesium Alkaline Ea...											Plot Atomic Mass ↗		13 Al Aluminum Post-Trans...	14 Si Silicon Metalloid	15 P Phosphorus Nonmetal	16 S Sulfur Nonmetal	17 Cl Chlorine Halogen	18 Ar Argon Noble Gas							
19 K Potassium Alkali Metal	20 Ca Calcium Alkaline Ea...	21 Sc Scandium Transition ...	22 Ti Titanium Transition ...	23 V Vanadium Transition ...	24 Cr Chromium Transition ...	25 Mn Manganese Transition ...	26 Fe Iron Transition ...	27 Co Cobalt Transition ...	28 Ni Nickel Transition ...	29 Cu Copper Transition ...	30 Zn Zinc Transition ...	31 Ga Gallium Post-Trans...	32 Ge Germanium Metalloid	33 As Arsenic Metalloid	34 Se Selenium Nonmetal	35 Br Bromine Halogen	36 Kr Krypton Noble Gas									
37 Rb Rubidium Alkali Metal	38 Sr Strontium Alkaline Ea...	39 Y Yttrium Transition ...	40 Zr Zirconium Transition ...	41 Nb Niobium Transition ...	42 Mo Molybdenum Transition ...	43 Tc Technetium Transition ...	44 Ru Ruthenium Transition ...	45 Rh Rhodium Transition ...	46 Pd Palladium Transition ...	47 Ag Silver Transition ...	48 Cd Cadmium Transition ...	49 In Indium Post-Trans...	50 Sn Tin Post-Trans...	51 Sb Antimony Metalloid	52 Te Tellurium Metalloid	53 I Iodine Halogen	54 Xe Xenon Noble Gas									
55 Cs Cesium Alkali Metal	56 Ba Barium Alkaline Ea...											72 Hf Hafnium Transition ...	73 Ta Tantalum Transition ...	74 W Tungsten Transition ...	75 Re Rhenium Transition ...	76 Os Osmium Transition ...	77 Ir Iridium Transition ...	78 Pt Platinum Transition ...	79 Au Gold Transition ...	80 Hg Mercury Transition ...	81 Tl Thallium Post-Trans...	82 Pb Lead Post-Trans...	83 Bi Bismuth Post-Trans...	84 Po Polonium Metalloid	85 At Astatine Halogen	86 Rn Radon Noble Gas
87 Fr Francium Alkali Metal	88 Ra Radium Alkaline Ea...											104 Rf Rutherford... Transition ...	105 Db Dubnium Transition ...	106 Sg Seaborgium Transition ...	107 Bh Bohrium Transition ...	108 Hs Hassium Transition ...	109 Mt Meitnerium Transition ...	110 Ds Darmstadt... Transition ...	111 Rg Roentgeni... Transition ...	112 Cn Copernicium Transition ...	113 Nh Nihonium Post-Trans...	114 Fl Flerovium Post-Trans...	115 Mc Moscovium Post-Trans...	116 Lv Livermorium Post-Trans...	117 Ts Tennessine Halogen	118 Og Oganesson Noble Gas
		57 La Lanthanum Lanthanide	58 Ce Cerium Lanthanide	59 Pr Praseody... Lanthanide	60 Nd Neodymium Lanthanide	61 Pm Promethium Lanthanide	62 Sm Samarium Lanthanide	63 Eu Europium Lanthanide	64 Gd Gadolinium Lanthanide	65 Tb Terbium Lanthanide	66 Dy Dysprosium Lanthanide	67 Ho Holmium Lanthanide	68 Er Erbium Lanthanide	69 Tm Thulium Lanthanide	70 Yb Ytterbium Lanthanide	71 Lu Lutetium Lanthanide										
		89 Ac Actinium Actinide	90 Th Thorium Actinide	91 Pa Protactinium Actinide	92 U Uranium Actinide	93 Np Neptunium Actinide	94 Pu Plutonium Actinide	95 Am Americium Actinide	96 Cm Curium Actinide	97 Bk Berkelium Actinide	98 Cf Californium Actinide	99 Es Einsteinium Actinide	100 Fm Fermium Actinide	101 Md Mendelevi... Actinide	102 No Nobelium Actinide	103 Lr Lawrencium Actinide										

Screenshot

Teória

Faraday

$$\text{rot } \mathbf{E} = -\frac{\partial \mathbf{B}}{\partial t} \quad U_i = -\frac{\partial \phi}{\partial t}$$

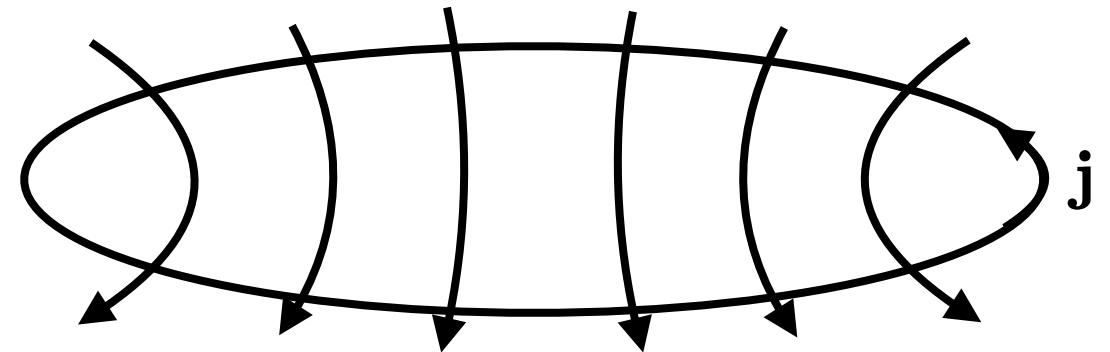
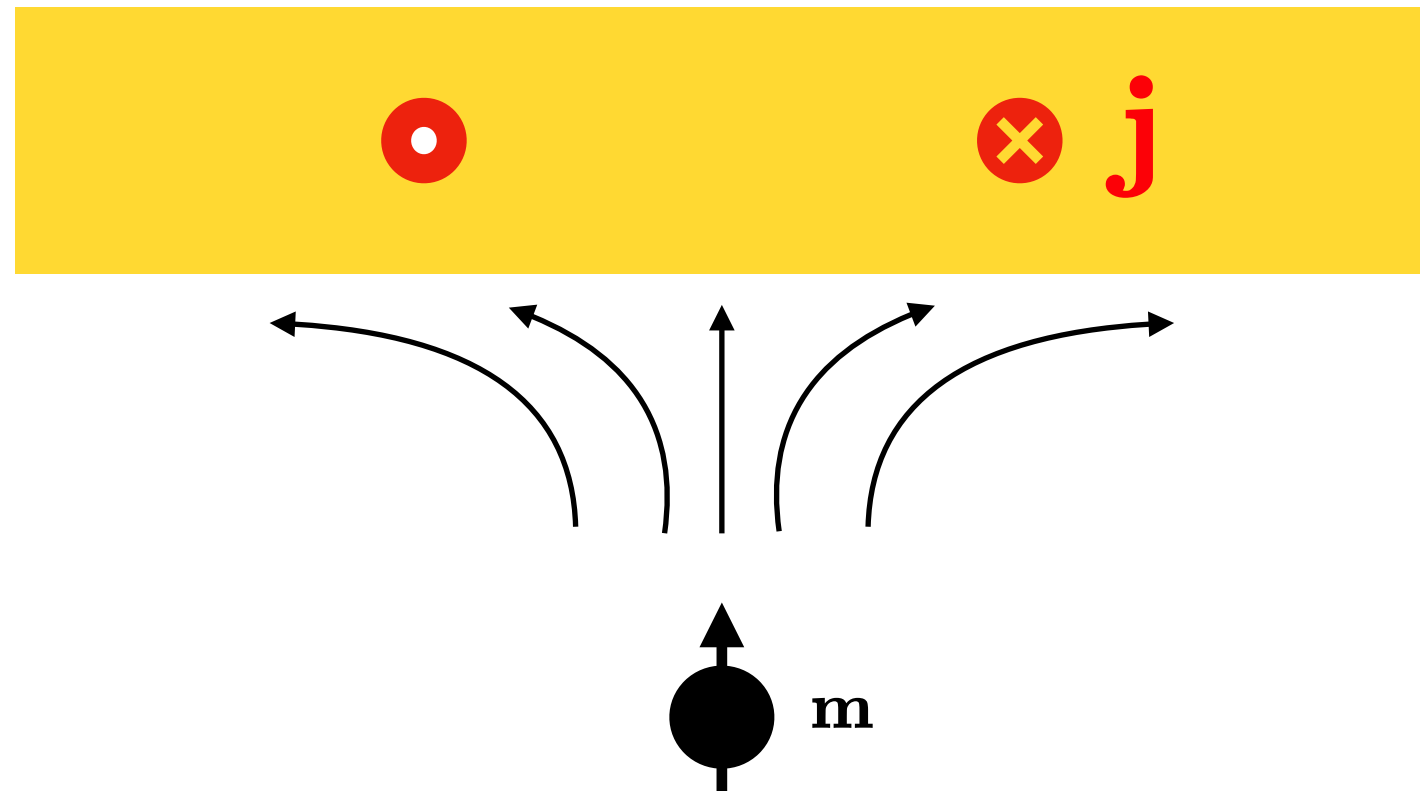
$$\phi = \int \mathbf{B} \cdot d\mathbf{S} \quad U = \int \mathbf{E} \cdot d\mathbf{r}$$

$$\rho \mathbf{j} = \mathbf{E} \quad \rho \frac{l}{S} S \mathbf{j} = l \mathbf{E} \quad RI = U$$
$$\mathbf{j} = \sigma \mathbf{E}$$

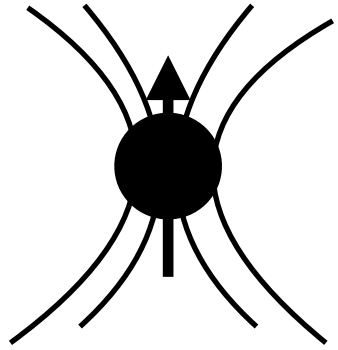
Biot-Savart

$$\text{rot } \mathbf{H} = \mathbf{j} + \frac{\partial \mathbf{D}}{\partial t}$$

$$\mathbf{m} = I \mathbf{S}$$

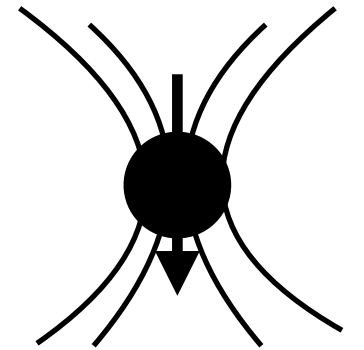
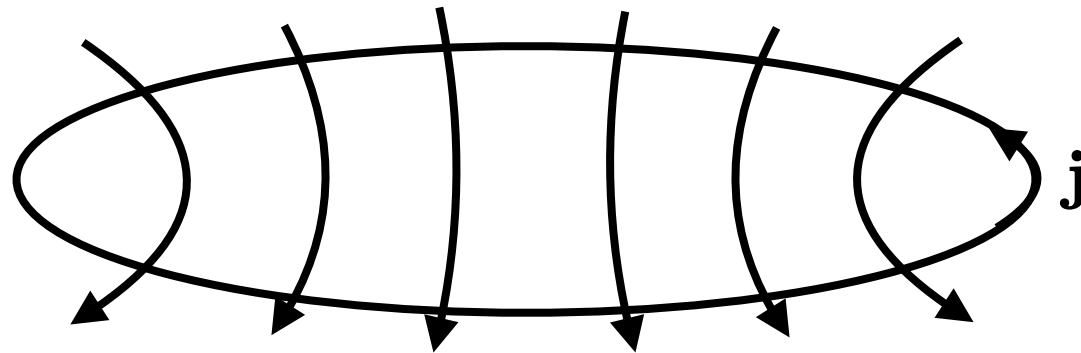
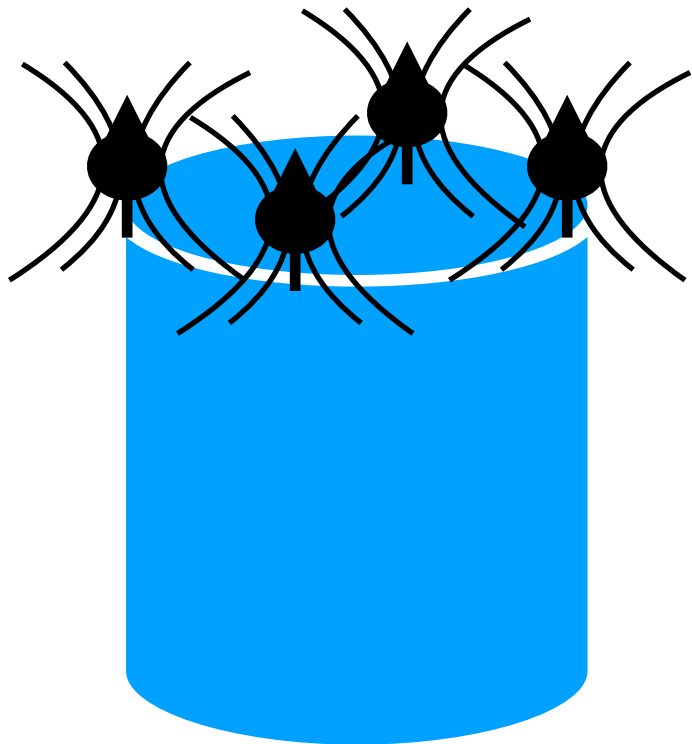


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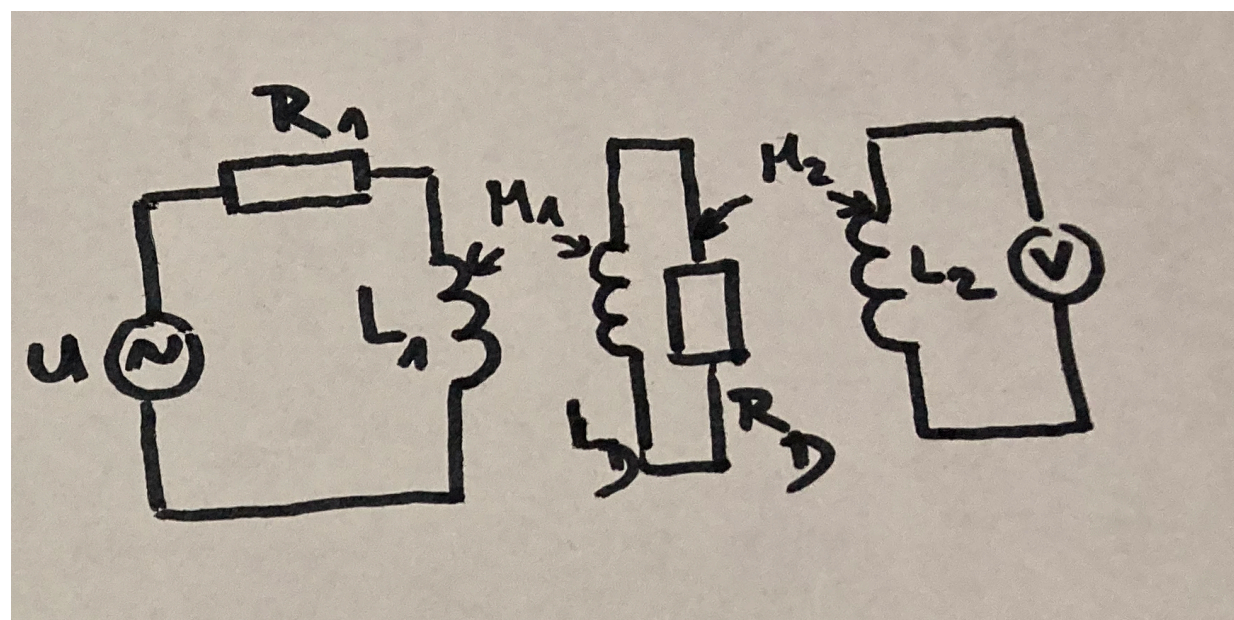
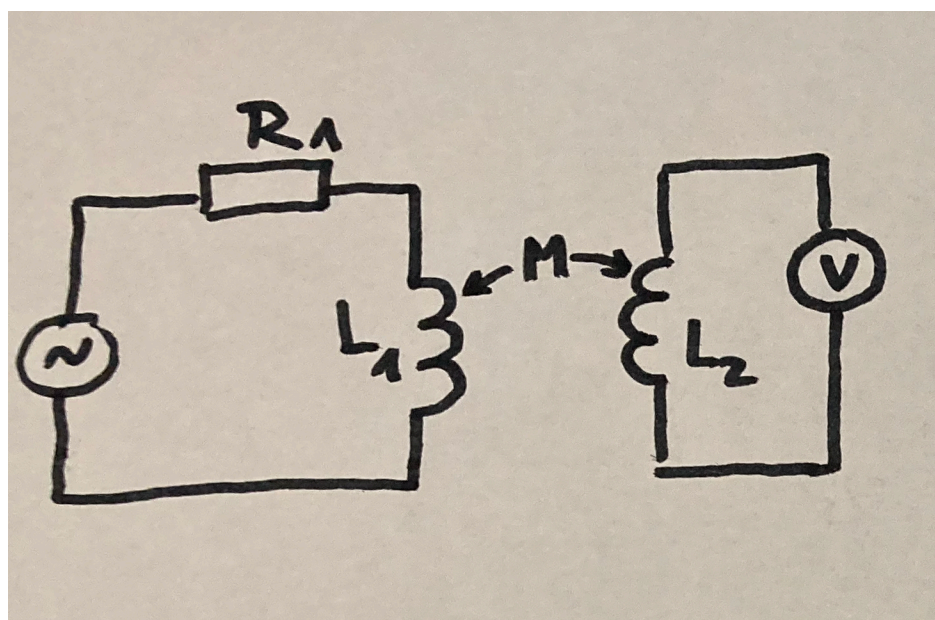


$$\mathbf{B} = \frac{\mu}{4\pi} \left(\frac{3\mathbf{r}(\mathbf{m} \cdot \mathbf{r})}{r^5} - \frac{\mathbf{m} \cdot \mathbf{r}}{r^3} \right)$$

$$\mathbf{m} = I \mathbf{S}$$



Teória



Tvar magnetu vs stabilita

$$\mathbf{E} = -\mathbf{m} \cdot \mathbf{B}$$

$$\boldsymbol{\tau} = \mathbf{m} \times \mathbf{B}$$

$$\mathbf{B} = \frac{\mu}{4\pi} \left(\frac{3\mathbf{r}(\mathbf{m} \cdot \mathbf{r})}{r^5} - \frac{\mathbf{m} \cdot \mathbf{r}}{r^3} \right)$$

