Helmholtzspule:

$$B = \left(\mu_0 \cdot \frac{8N}{\sqrt{125} \cdot R}\right) \cdot I$$

$N = 120 \quad R = 0{,}145\,m$

$\mu_0 = 1{,}257 \cdot 10^{-6} \frac{As}{Vm}$

Induktionsspannung

$$U_{ind} = (n \cdot A) \frac{\Delta B}{\Delta t}$$

A = Fläche der Spule

$A =$

$n = 750$ Windungen

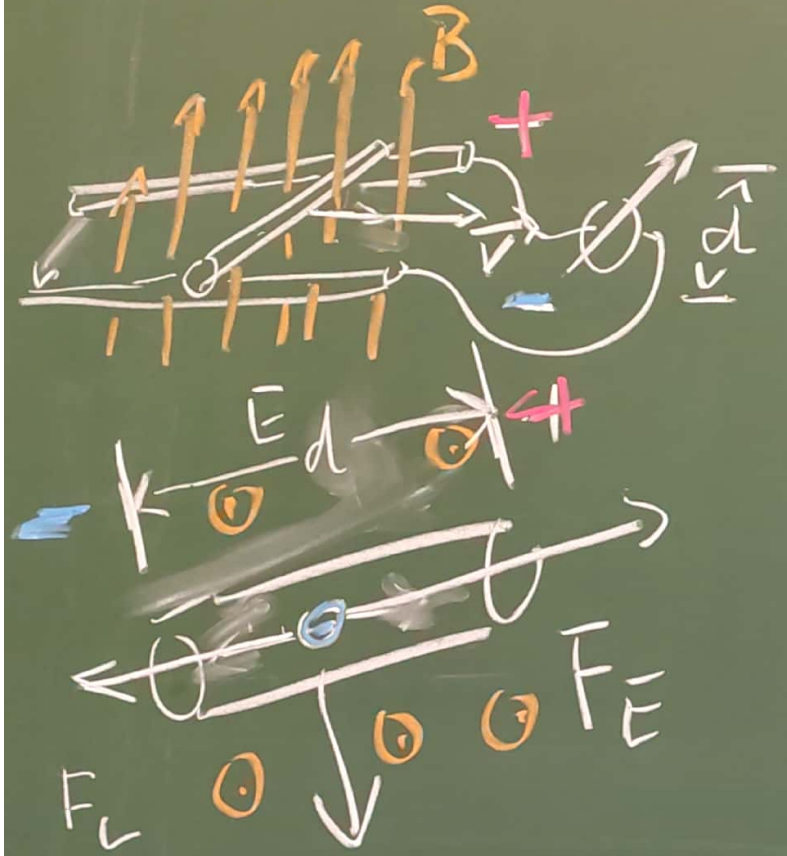
Spule innen

$\frac{7 + 3{,}6}{2} = 5{,}3\,cm$

$A = 0{,}053^2\,m^2$

$\Delta t = 16{,}857\,sec$	15,85	28,665	6,191	8,624
$I = 2{,}06A$	2,06	2,06	2,15	2,43
$\Delta B = 1{,}533\,mT$	1,533mT	1,533mT	1,6mT	1,81mT
$U_{ind} = 0{,}2mV$	0,15V	0,1	0,5	0,5
$U_{theoretisch} = 0{,}194mV$	0,204	0,113	0,52	0,44

Induktion



Feldkraft F_E

Lorentzkraft F_L

$$F_L = F_E$$

$$e v B = e \cdot E$$

$$v B = E \quad | \cdot d$$

E Feld ist homogen

$$d v B = E \cdot d \qquad U = E \cdot d$$

$$d v B = U_{ind}$$

E-Feld

$$E = \frac{F}{q} \qquad F = E \cdot q$$

Elektronen $q = e$

siehe S. 209

Induktion

elektr. Feld $E = \frac{F}{q}$

$F_L = F_{el}$

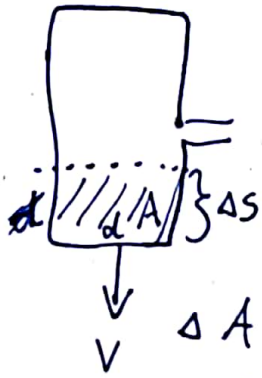
$e v B = e \cdot E$

$E = B \cdot v$

$U_{ind} = E \cdot d$

$E = \frac{U_{ind}}{d}$

Leiterschleife



$\Delta A = d \cdot \Delta s$

$v = \frac{\Delta s}{\Delta t}$

$\frac{U_{ind}}{d} = B \cdot v$

$U_{ind} = B \cdot v \cdot d$

$U_{ind} = B \cdot \frac{\Delta s}{\Delta t} \cdot d = B \frac{\Delta A}{\Delta t} = B \cdot A'$

$B = const \quad U_{ind} = B \cdot A'$

$A = const$ und $U_{ind} = A \cdot B'$

$U_{ind} = (A \cdot B)' = A'B + AB'$!

B Helmholtz $B = \mu_0 \frac{8N}{\sqrt{125}R} \cdot I$

$N = 120$

$R = 14{,}5$

$U_{ind} = 750 \cdot A_s \cdot \frac{\Delta B}{\Delta t}$