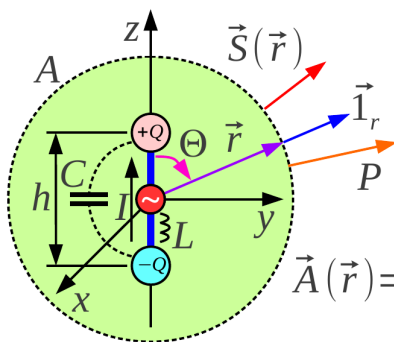


shranjeno kot pdf, nato pdftoppm -png -r 200:



## Sevanje kratkega dipola

$$\omega \neq 0$$

$$k = \omega \sqrt{\mu \epsilon} = \frac{2\pi}{\lambda}$$

Poenostavitve:

$$(1) \quad h \ll r$$

$$(2) \quad h \ll \lambda$$

$$\vec{A}(\vec{r}) = \frac{\mu}{4\pi} \int_V \vec{J}(\vec{r}') \frac{e^{-jk|\vec{r}-\vec{r}'|}}{|\vec{r}-\vec{r}'|} dV' \approx (\vec{1}_r \cos \Theta - \vec{1}_\Theta \sin \Theta) \frac{\mu I h}{4\pi} \frac{e^{-jkr}}{r}$$

$$\vec{H}(\vec{r}) = \frac{1}{\mu} \text{rot } \vec{A} = \vec{1}_\Phi \frac{I h}{4\pi} e^{-jkr} \left( \frac{jk}{r} + \frac{1}{r^2} \right) \sin \Theta$$

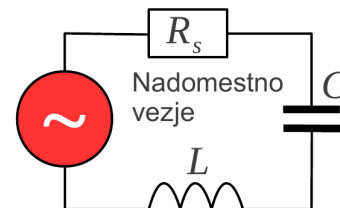
$$\frac{1}{\omega \epsilon} = \frac{1}{\omega \sqrt{\mu \epsilon}} \sqrt{\frac{\mu}{\epsilon}} = \frac{Z}{k}$$

$$\vec{E}(\vec{r}) = \frac{1}{j\omega \epsilon} \text{rot } \vec{H} = \frac{I h}{4\pi j\omega \epsilon} e^{-jkr} \left[ \vec{1}_r \left( \frac{jk}{r^2} + \frac{1}{r^3} \right) 2\cos \Theta + \vec{1}_\Theta \left( -\frac{k^2}{r} + \frac{jk}{r^2} + \frac{1}{r^3} \right) \sin \Theta \right]$$

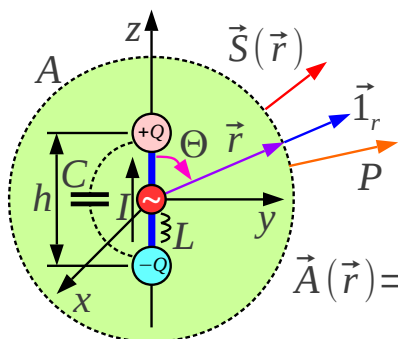
$$\vec{S}(\vec{r}) = \frac{1}{2} \vec{E}(\vec{r}) \times \vec{H}(\vec{r})^* = \frac{|I|^2 h^2}{32\pi^2 \omega \epsilon} \left[ \vec{1}_r \left( \frac{k^3}{r^2} - \frac{j}{r^5} \right) \sin^2 \Theta + \vec{1}_\Theta \left( \frac{jk^2}{r^3} + \frac{j}{r^5} \right) 2\cos \Theta \sin \Theta \right]$$

$$P = \oint_{r \rightarrow \infty} \vec{S}(\vec{r}) \cdot \vec{1}_r r^2 \sin \Theta d\Theta d\Phi \approx \frac{|I|^2 h^2 Z k^2}{12\pi}$$

$$R_s = \frac{2P}{|I|^2} = \frac{h^2 Z k^2}{6\pi} = \frac{2\pi Z}{3} \left( \frac{h}{\lambda} \right)^2$$



shranjeno kot svg:



## Sevanje kratkega dipola

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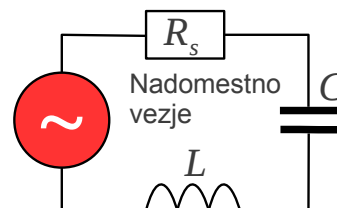
$$\frac{1}{\omega \epsilon} = \frac{1}{\omega \sqrt{\mu \epsilon}} \sqrt{\mu} = \frac{Z}{k}$$

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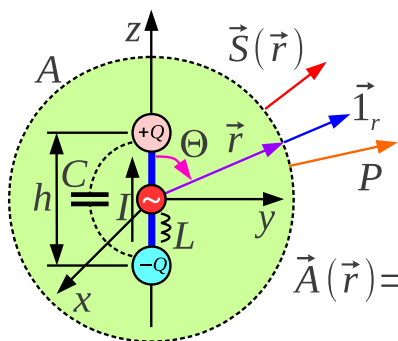
$$\vec{S}(\vec{r}) = \frac{1}{2} \vec{E}(\vec{r}) \times \vec{H}(\vec{r})^* = \frac{|I|^2 h^2}{32\pi^2 \omega \epsilon} \left[ \vec{1}_r \left( \frac{k^3}{r^2} - \frac{j}{r^5} \right) \sin^2 \Theta + \vec{1}_\Theta \left( \frac{jk^2}{r^3} + \frac{j}{r^5} \right) 2 \cos \Theta \sin \Theta \right]$$

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shranjeno kot pdf, nato pdf2svg:



## Sevanje kratkega dipola

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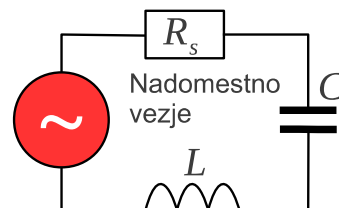
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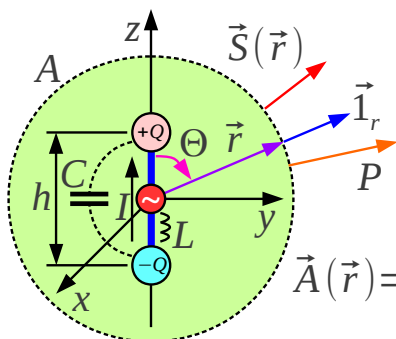
$$\vec{S}(\vec{r}) = \frac{1}{2} \vec{E}(\vec{r}) \times \vec{H}(\vec{r})^* = \frac{|I|^2 h^2}{32\pi^2 \omega \epsilon} \left[ \vec{1}_r \left( \frac{k^3}{r^2} - \frac{j}{r^5} \right) \sin^2 \Theta + \vec{1}_\Theta \left( \frac{jk^2}{r^3} + \frac{j}{r^5} \right) 2\cos \Theta \sin \Theta \right]$$

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shranjeno kot svm:



## Sevanje kratkega dipola

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$$\vec{H}(\vec{r}) = \frac{1}{\mu} \text{rot } \vec{A} = \vec{1}_\Phi \frac{I h}{4\pi} e^{-jkr} \left( \frac{jk}{r} + \frac{1}{r^2} \right) \sin \Theta$$

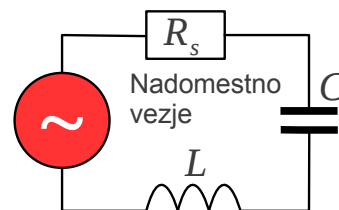
$$\frac{1}{\omega \epsilon} = \frac{1}{\omega \sqrt{\mu \epsilon}} \sqrt{\frac{\mu}{\epsilon}} = \frac{Z}{k}$$

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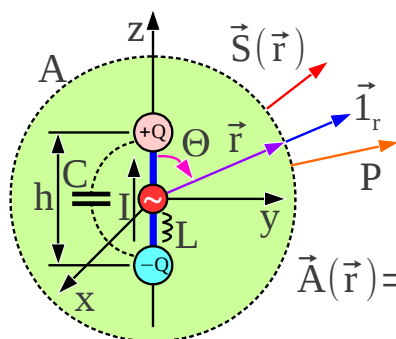
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shranjeno kot met:



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