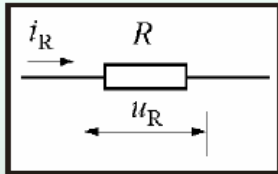


Dobar dan. Mala retrospektiva, jer sam opet nasao interesantan material pa hocu da ga podelim sa vama. Prvo otpornik u kolu naizmenicne struje.

## Prosto kolo sa termogenom otpornošću $R$



$$i = I_m \sin(\omega t + \theta)$$

$$u = R \cdot i$$

$$u = R \cdot I_m \sin(\omega t + \theta)$$

$$u = U_m \cdot \sin(\omega t + \theta + \varphi)$$

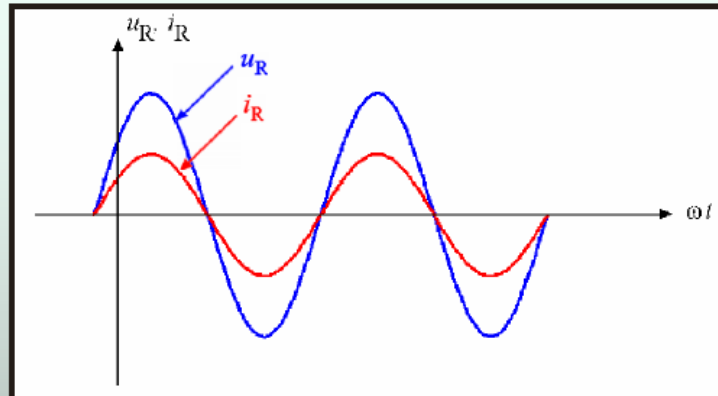


$$U_m = R \cdot I_m / \sqrt{2}$$

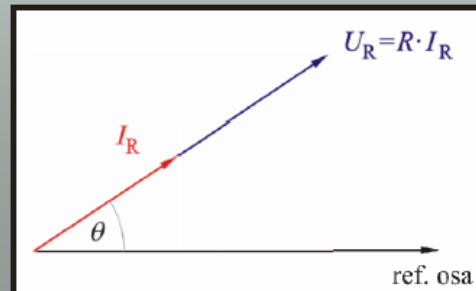
$$U = R \cdot I$$

$$\varphi = 0$$

**NAPON I STRUJA SU U FAZI**

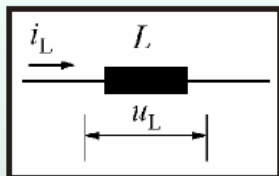


$\varphi$  - ugao između napona i struje  
(napon prednjači u odnosu na struju)



Lepo, s tim sto sam ja ili sto smo mi razmatrali slucaj kada je  $\theta=0$  pa je fazni vector napona bio na referentnoj osi.

## Prosto kolo sa kalemom induktivnosti $L$



$$i = I_m \sin(\omega t + \theta)$$

$$u_L = L \frac{di_L}{dt}$$

$$u = L \cdot \frac{d(I_m \sin(\omega t + \theta))}{dt}$$

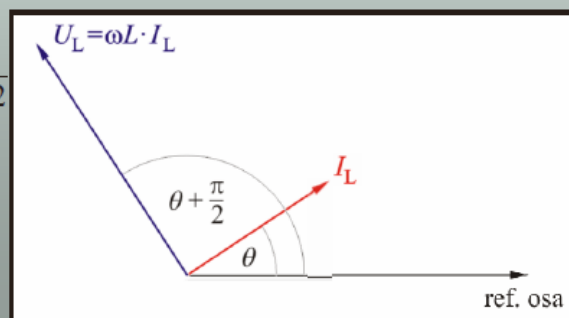
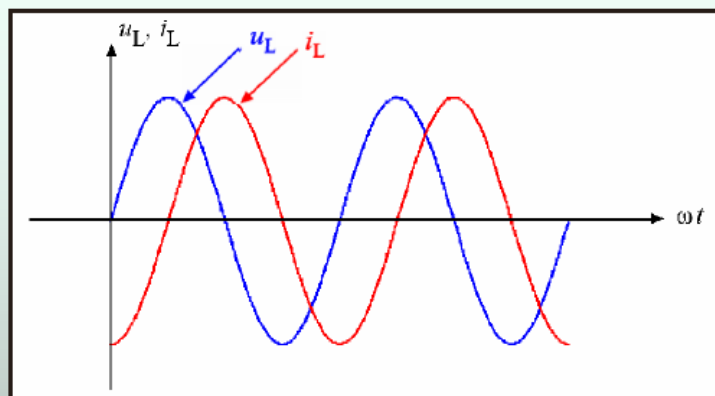
$$u = \omega L \cdot I_m \cdot \cos(\omega t + \theta)$$

$$u = \omega L \cdot I_m \cdot \sin(\omega t + \theta + \frac{\pi}{2}) \quad \left. \begin{array}{l} U_m = \omega L \cdot I_m \\ / \sqrt{2} \end{array} \right\}$$

$$u = U_m I_m \sin(\omega t + \theta + \varphi) \quad \boxed{U = X_L \cdot I}$$

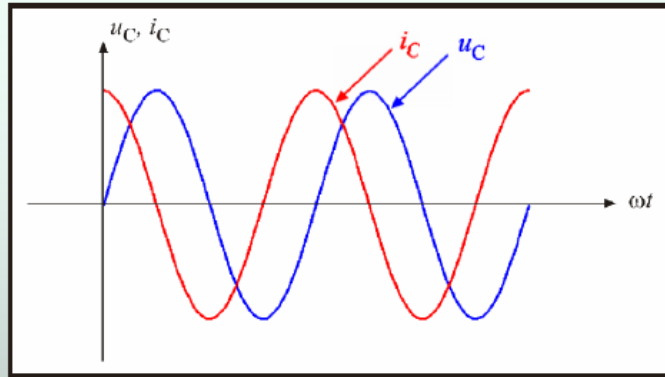
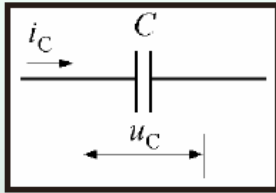
$$\boxed{X_L = \omega \cdot L}$$

$$\boxed{\varphi = 90^\circ}$$



**NAPON PREDNJAČI U ODNOSU NA STRUJU ZA  $90^\circ$**

## Prosto kolo sa kondenzatorom kapacitivnosti C



$$i = I_m \sin(\omega t + \theta)$$

$$i_C = C \frac{du_C}{dt} \Rightarrow u_C = \frac{1}{C} \int_0^t i dt$$

$$u_C = \frac{1}{C} \int_0^t I_m \sin(\omega t + \theta) dt$$

$$u_C = \frac{1}{C} \cdot \frac{1}{\omega} (-\cos(\omega t + \theta))$$

$$u_C = \frac{1}{\omega C} \cdot I_m \cdot \sin(\omega t + \theta - \frac{\pi}{2})$$

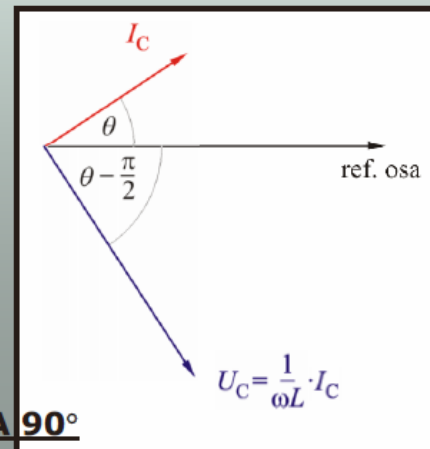
$$u = U_m I_m \sin(\omega t + \theta + \varphi)$$

$$U_m = \frac{1}{\omega C} \cdot I_m \cdot \frac{1}{\sqrt{2}}$$

$$U = X_C \cdot I$$

$$X_C = \frac{1}{\omega \cdot C}$$

$$\varphi = -90^\circ$$



**NAPON ZAOSTAJE U ODNOSU NA STRUJU ZA  $90^\circ$**

Lepo nacrtano, lepo napisano.

Toliko za prvo javljanje, svako eventualno pitanje, sugestiju saljite na mejl [zvivic@gmail.com](mailto:zvivic@gmail.com).