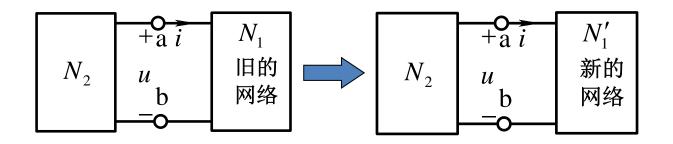
等效的概念



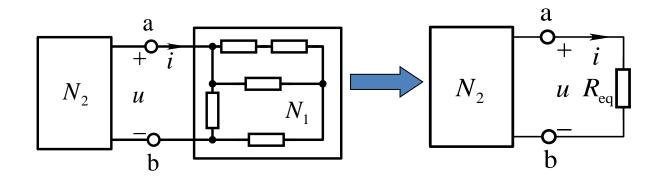
等效: 是指被化简的网络与等效网络的对应端口特性相同, 即端口*u-i* 关系方程相同。



等效的概念



等效: 是指被化简的网络与等效网络的对应端口特性相同, 即端口*u-i* 关系方程相同。

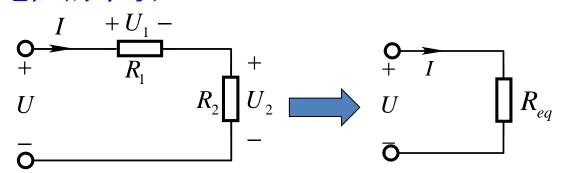


注: 等效只是对外电路等效

电阻的串联等效



电阻的串联



根据KVL及欧姆定律列写电路方程

$$U = U_1 + U_2$$

$$= R_1 I + R_2 I = (R_1 + R_2)I = R_{eq} I$$
 即: $R_{eq} = R_1 + R_2$ 推广之 $R_{eq} = \sum_{i=1}^{N} R_k$

电阻的串联等



串联分压

$$\begin{array}{c|cccc}
I & +U_1 - \\
+ & R_1 & + \\
U & R_2 & U \\
\hline
- & & & & \\
\end{array}$$

$$U_1 = R_1 I = \frac{R_1}{R_1 + R_2} U$$

$$\begin{bmatrix} & & & \\ & R_2 & & \\ & & U_2 & = R_2 I = \frac{R_2}{R_1 + R_2} U \\ & & & \\ & &$$

$$U_k = R_k I = \frac{R_k}{R_{\text{eq}}} U$$

$$\begin{array}{c}
P_1 = U_1 I = R_1 I^2 \\
P_2 = U_2 I = R_2 I^2
\end{array}
\qquad
\begin{array}{c}
U_1 \\
U_2 = \frac{P_1}{P_2} = \frac{R_1}{R_2}$$

$$\frac{U_1}{U_2} = \frac{P_1}{P_2} = \frac{R_1}{R_2}$$