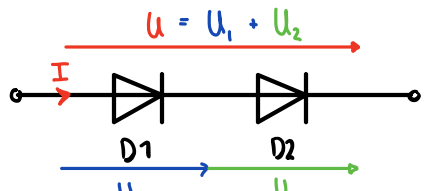
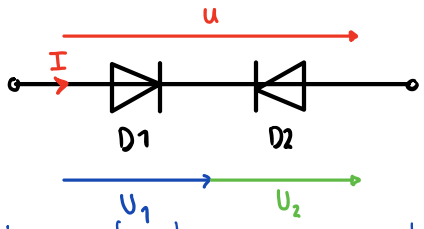
Circuits à diode

- LED + Resistor or LED + source courant (Mos-transistor)
- LED + Res. + PWM
- Circuit de Villard → alignment-circuit
- Full-wave rectifier or half wave
- Doubleur/quadrupleur de tension de Delon
- Circuit Greinacher ($U_0 = 2 \cdot U_i$, $4 \cdot U_i$)

Connection série et anti-série

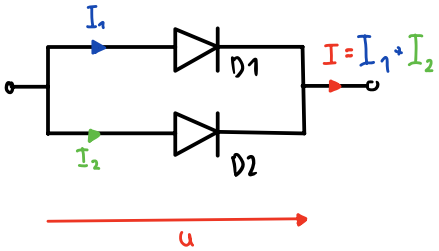


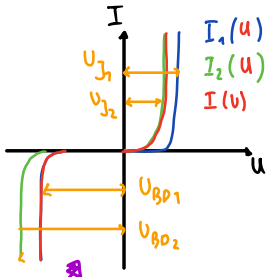
=> sommer les caractéristiques tension en fonction du courant



=> la caractéristique $U_2(I)$ doit être prise avec une rotation de 180°.

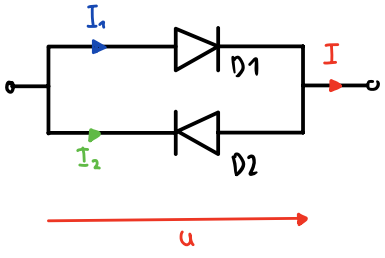
Connexion de diodes en parallèle

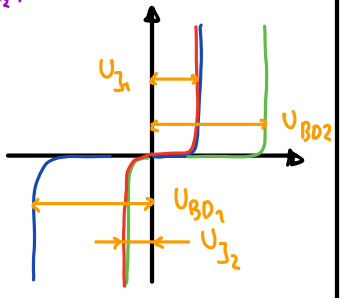


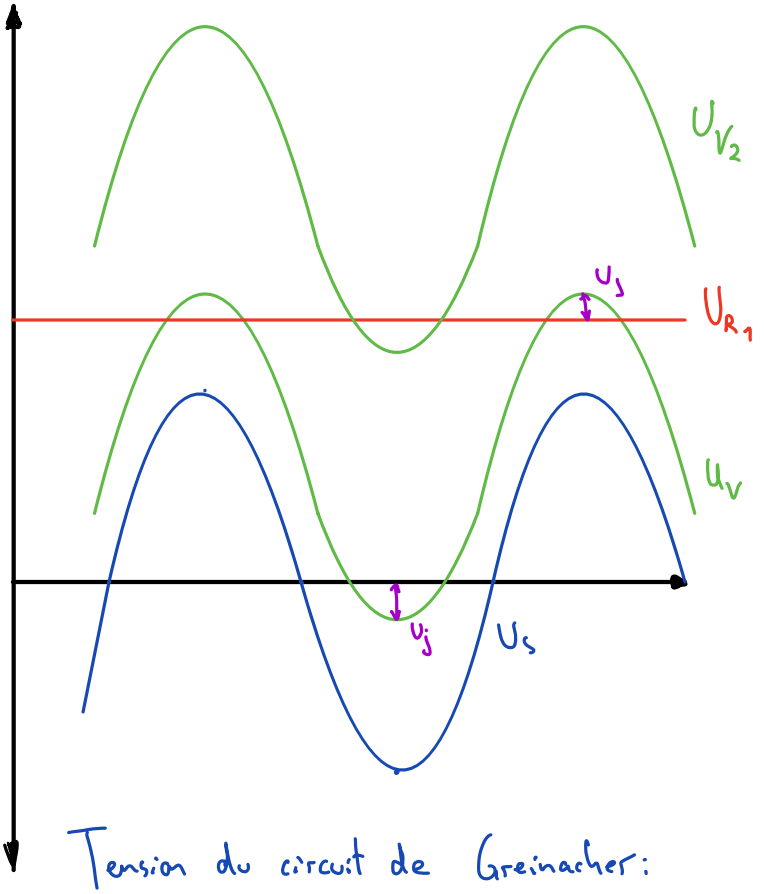


$U_J \approx \min(U_{J1}, U_{J2})$

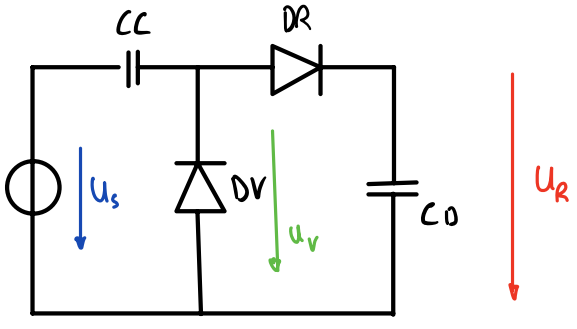
$U_{BD} \approx \min(U_{BD1}, U_{BD2})$







Ciruit Greinacher



Tension du circuit de Greinacher:

$$U_R = 2 \cdot \hat{U}_s - 2 U_J$$

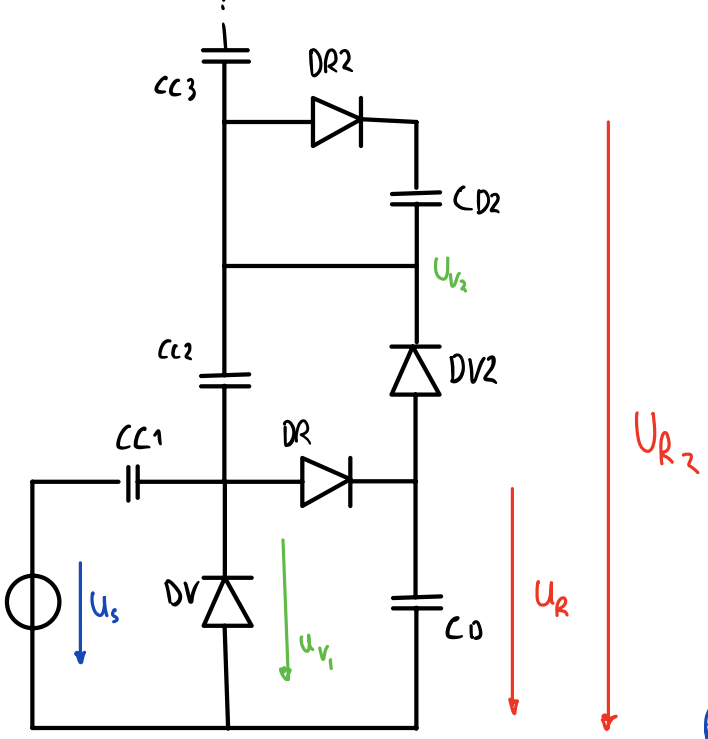
Tension du circuit de cascade:

$$U_{R_2} = U_{R_1} + 2\hat{U}_s - 2U_s$$

$$U_{V_2} = U_{V_1} + U_{R_1} - U_J$$

$$U_{R_N} = N(2 \cdot \hat{U}_s - 2U_J)$$

Cascade haut tension



Ce qu'on gagne en tension, on perd en courant

CC restitue la charge utilisée par la résistance de charge

Le temps de chargement augmente le nombre d'étages

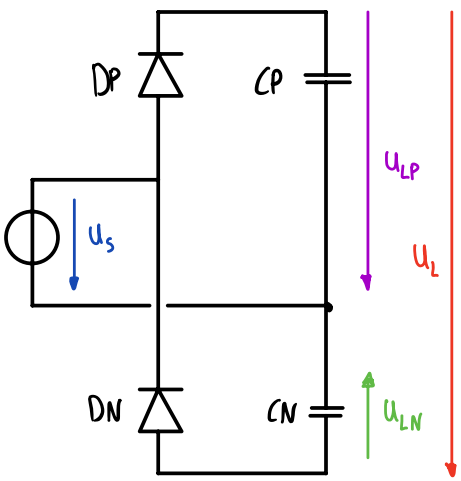
Comportement très non linéaire
↳ dépend nombre étage et rapport CC / CD

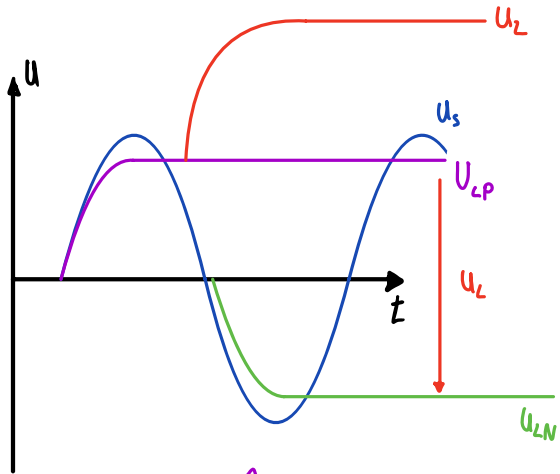
$\hat{U}_s > U_j$, on peut utiliser des diodes schottky

$I_D = I_{SJ}\left\{e^{U_D/(m_j U_T)} - 1\right\}$

pareil pour diode à jonction ou diode Schottky

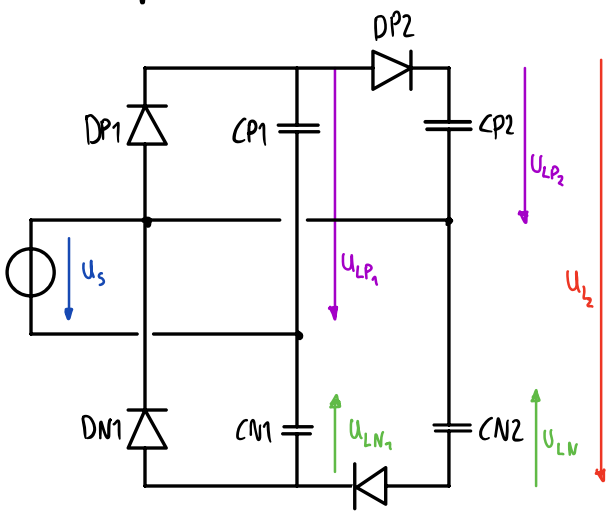
▶ Doubleur de tension de Delon





$U_L = 2 \cdot \hat{U}_s - 2\,U_j$

▶ Quadrupleur



$U_{LP1} = U_{LP2} = \hat{U}_s - U_j$ (en régime établi)

$U_{LN1} = U_{LN2} = -(\hat{U}_s - U_j)$

$U_{L2} = U_{LP_1} + U_{LP_2} - U_{LN_1} - U_{LN2}$

$U_{L2} = 2 \cdot (2 \cdot \hat{U}_s - 2U_j)$