

Oscillateur à déphaseur RC

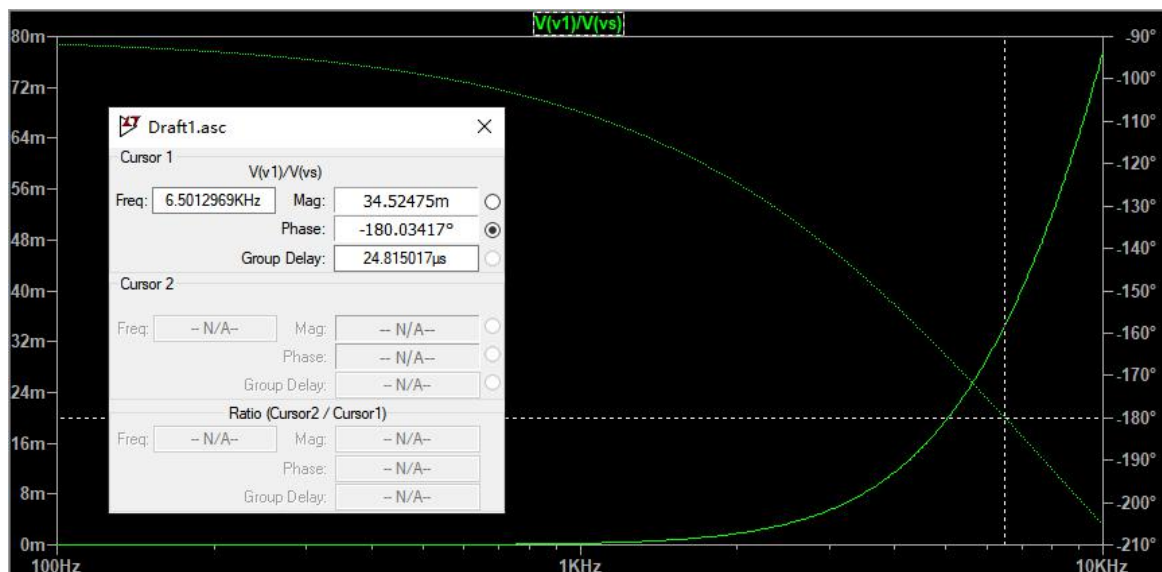
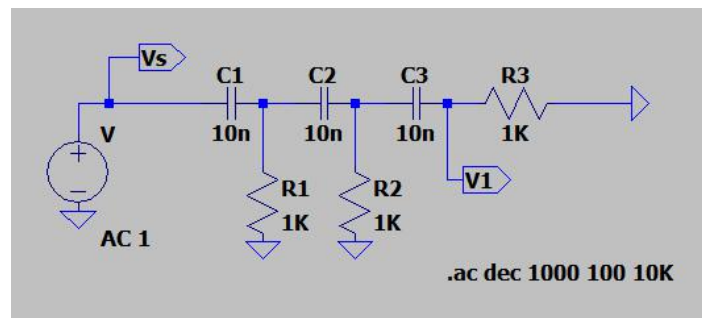
1 Étude théorique

$$1. \beta(s) = \frac{x_4}{x_3} = \left(\frac{R}{R + \frac{1}{sC}} \right)^3,$$

$$\text{transformer en } j\omega: \beta(j\omega) = \frac{1}{1 - \frac{3}{(\omega RC)^2} - j\left(\frac{3}{\omega RC} - \frac{1}{(\omega RC)^3}\right)}$$

2 Étude numérique

2.

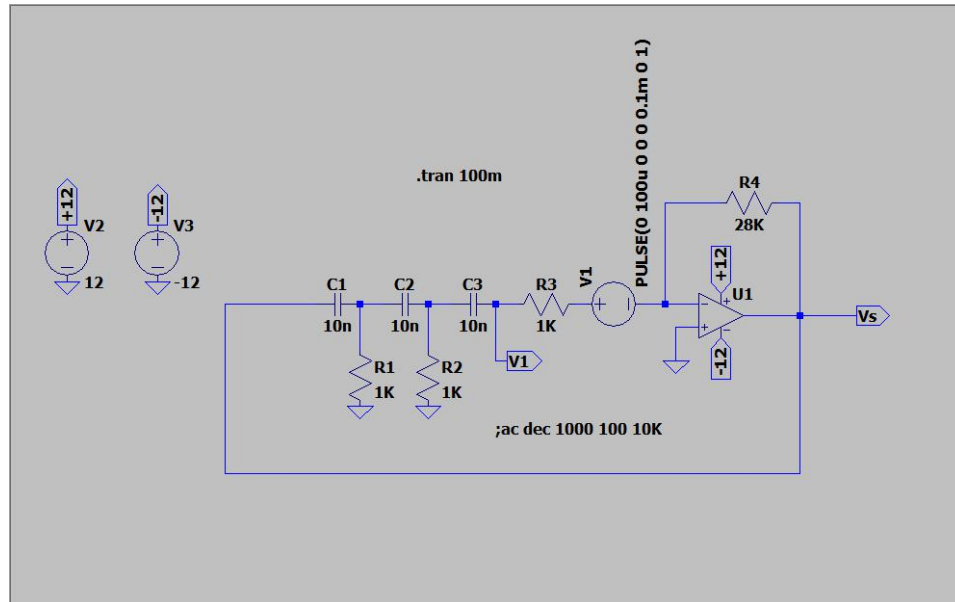


$$3. f_0 = \frac{1}{2\pi\sqrt{6}RC} \approx 6.5\text{KHz}$$

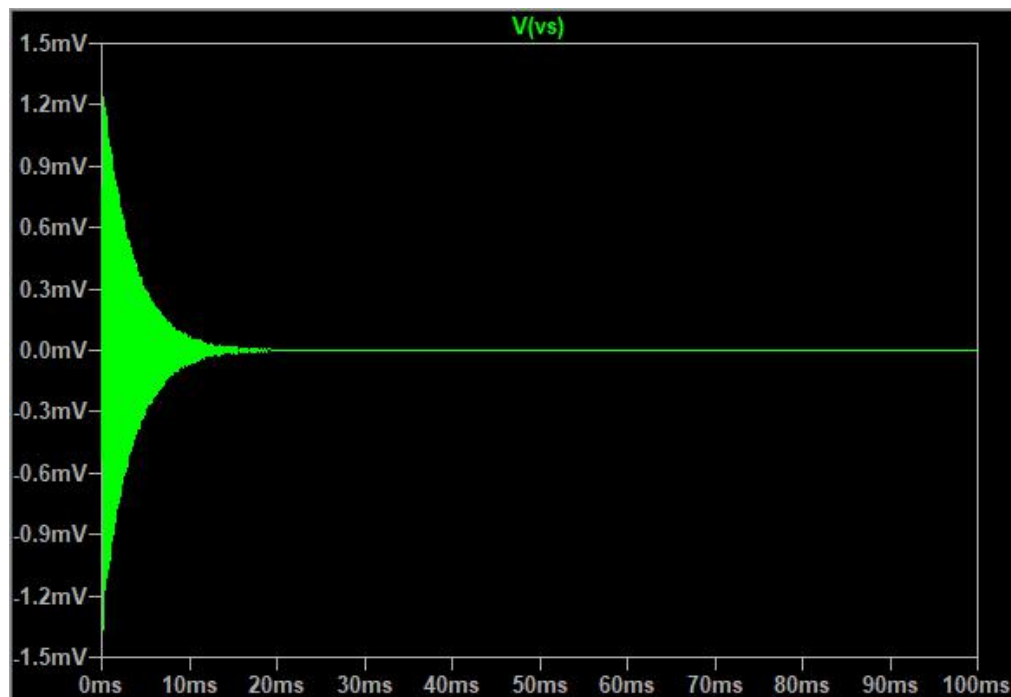
On voit par simulation que quand le phase égale -180 degré, la fréquence est 6.5KHz, et donc A est presque égale à -29.

4.

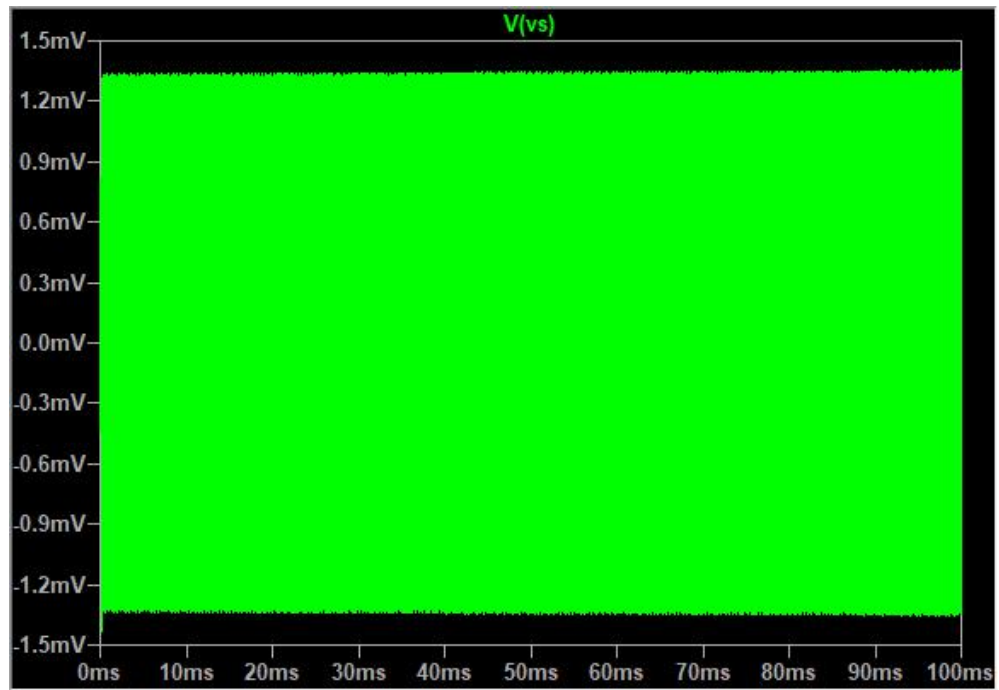
5.



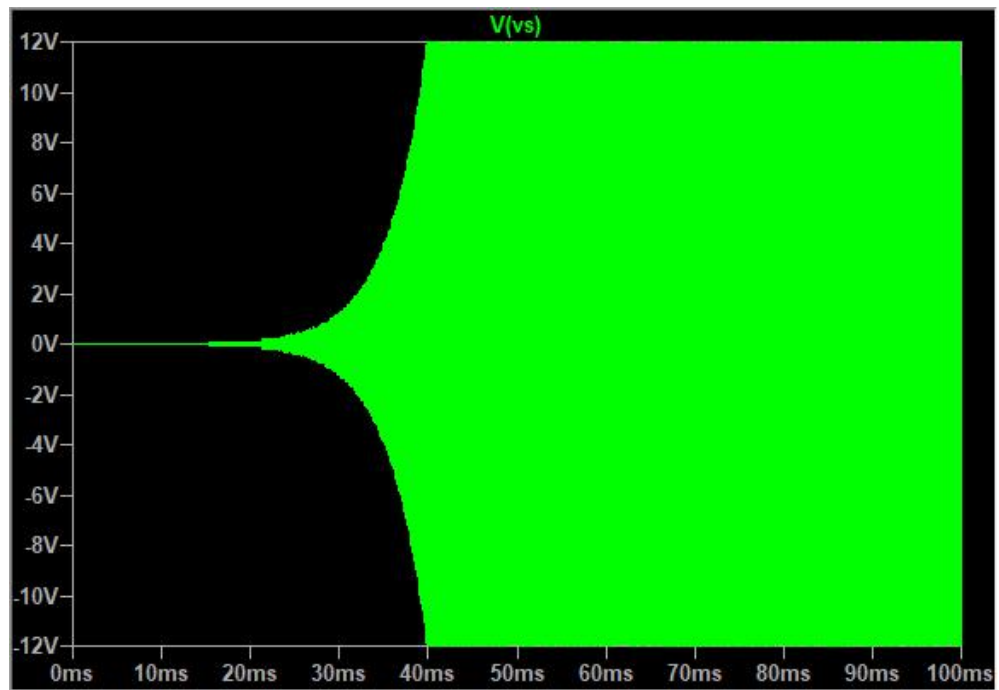
6. Quand $R2 = 28\text{K}\Omega$



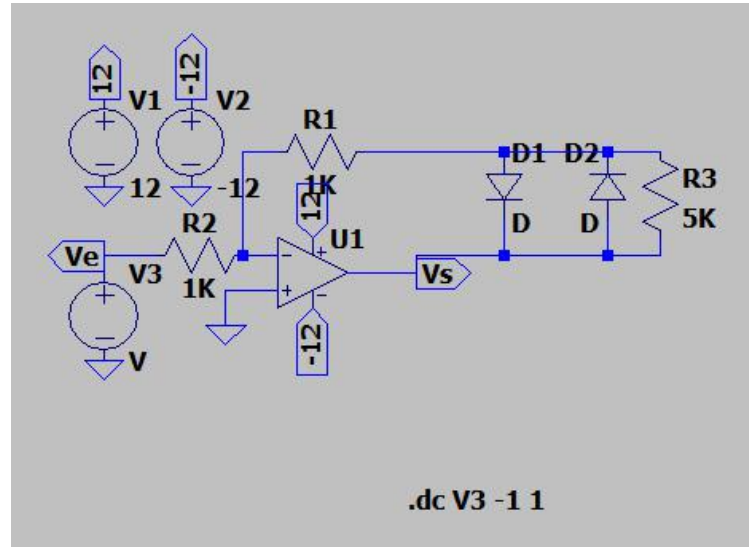
Quand $R2 = 29.093\text{K}\Omega$



Quand $R2 = 30\Omega$



7.



8.

