

# ControlSysLab - Rapport Complet avec Figures

Généré le 06/08/2025 à 16h29

RAPPORT COMPLET - ControlSysLab

=== MATRICES D'ENTRÉE ===

A =

$\begin{bmatrix} 0 & 1 \end{bmatrix}$

$\begin{bmatrix} -2 & -3 \end{bmatrix}$

B =

$\begin{bmatrix} 0 \end{bmatrix}$

$\begin{bmatrix} 1 \end{bmatrix}$

C =

$\begin{bmatrix} 1 & 0 \end{bmatrix}$

D =

$\begin{bmatrix} 0 \end{bmatrix}$

=== CONTRÔLABILITÉ ===

Wc =

$\begin{bmatrix} 0. & 1. \end{bmatrix}$

$\begin{bmatrix} 1. & -3. \end{bmatrix}$

=== OBSERVABILITÉ ===

Wo =

$\begin{bmatrix} 1. & 0. \end{bmatrix}$

$\begin{bmatrix} 0. & 1. \end{bmatrix}$

=== PID ===

$K_p = 2$ ,  $K_i = 1$ ,  $K_d = 0.5$

Erreur (5 premiers) : [1.      0.95561474 0.91041307 0.865261   0.82082111]

Fonction de transfert (boucle ouverte) :

<TransferFunction>: sys[21]

Inputs (1): ['u[0]']

Outputs (1): ['y[0]']

$$0.5 s^2 + 2 s + 1$$

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$$s^3 + 3 s^2 + 2 s$$

Figure : pid\_response.png

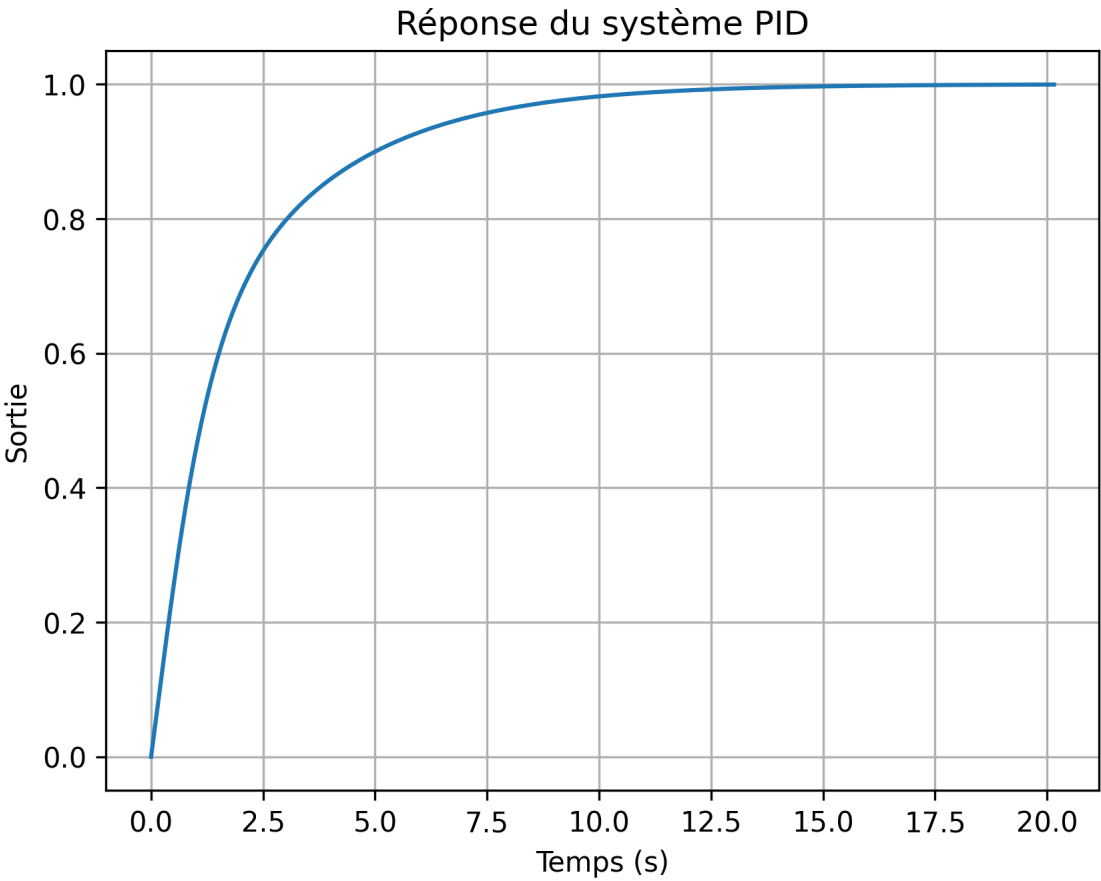


Figure : poles\_plot.png

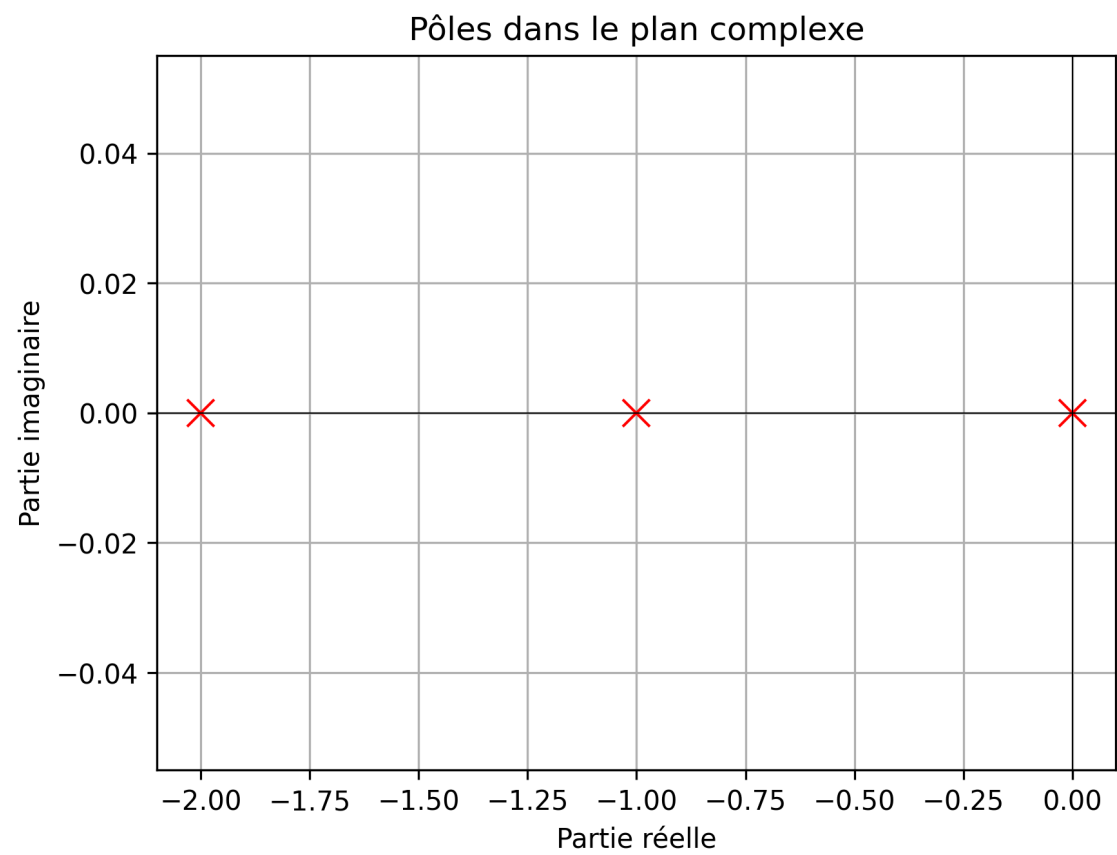


Figure : impulse\_plot.png

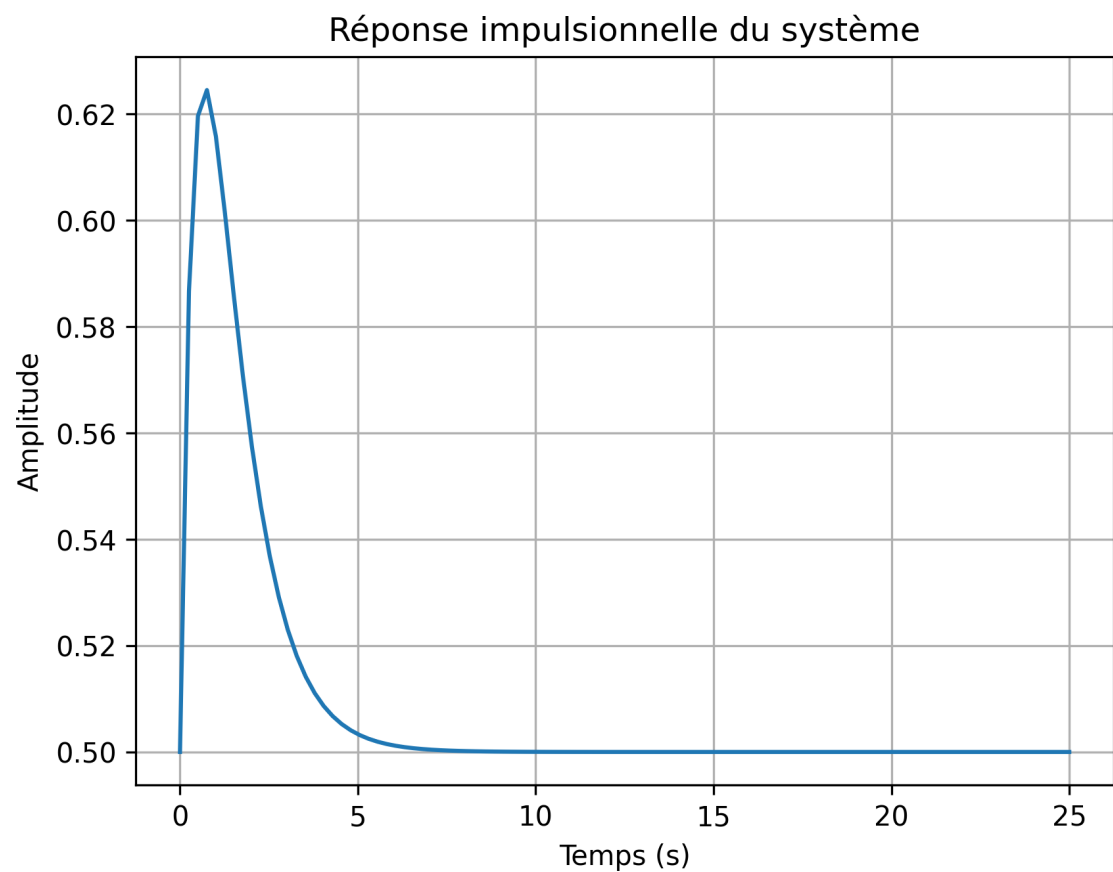


Figure : bode\_plot.png

