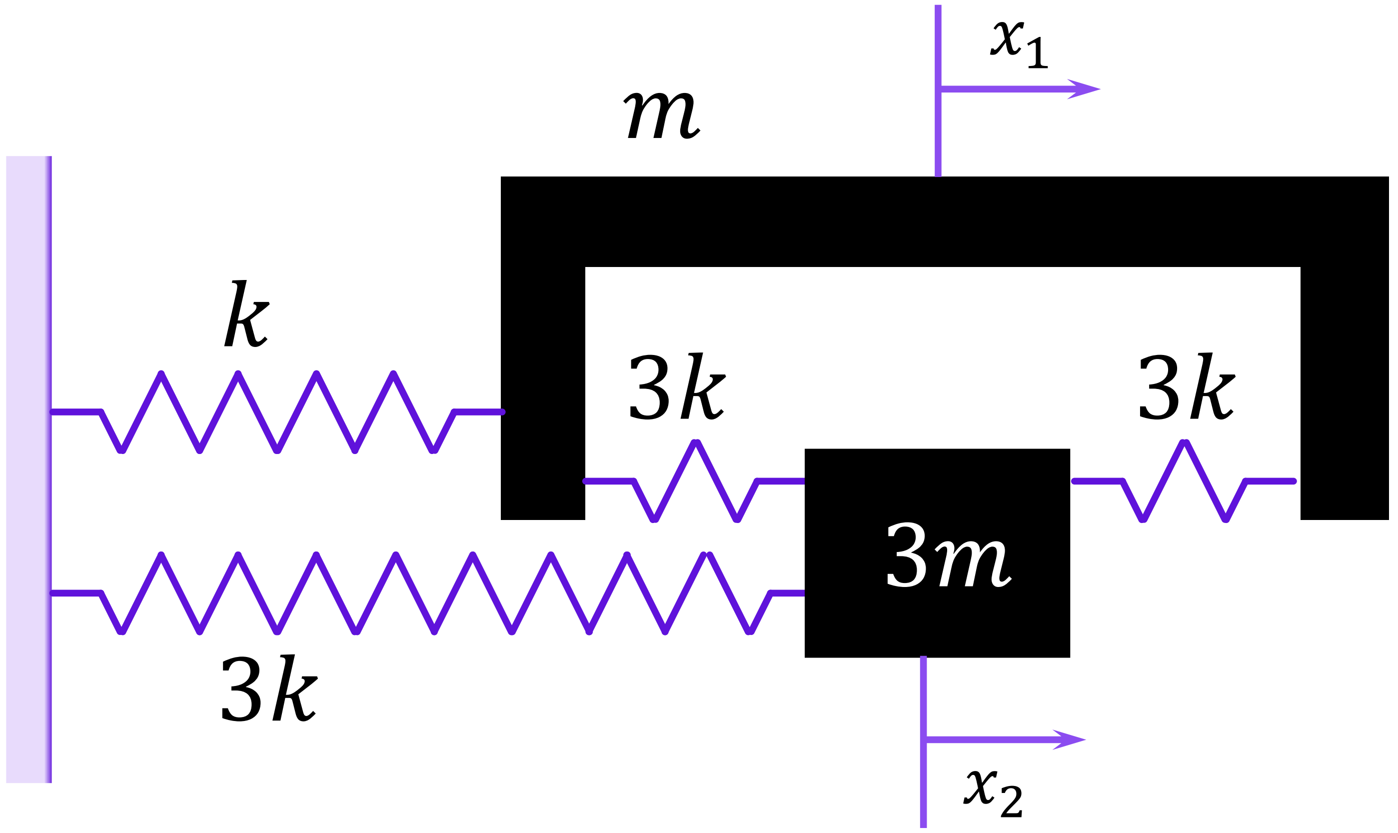
Semaine 9
QCMs

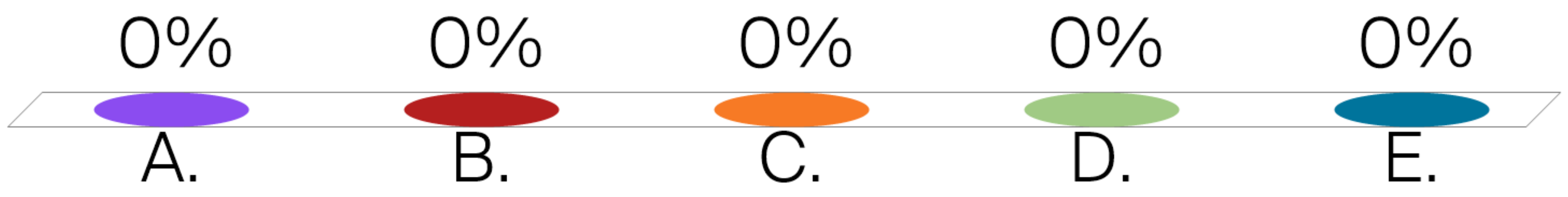
ME-332 – Mécanique Vibratoire

École
polytechnique
fédérale
de Lausanne

EPFL Combien DdL?

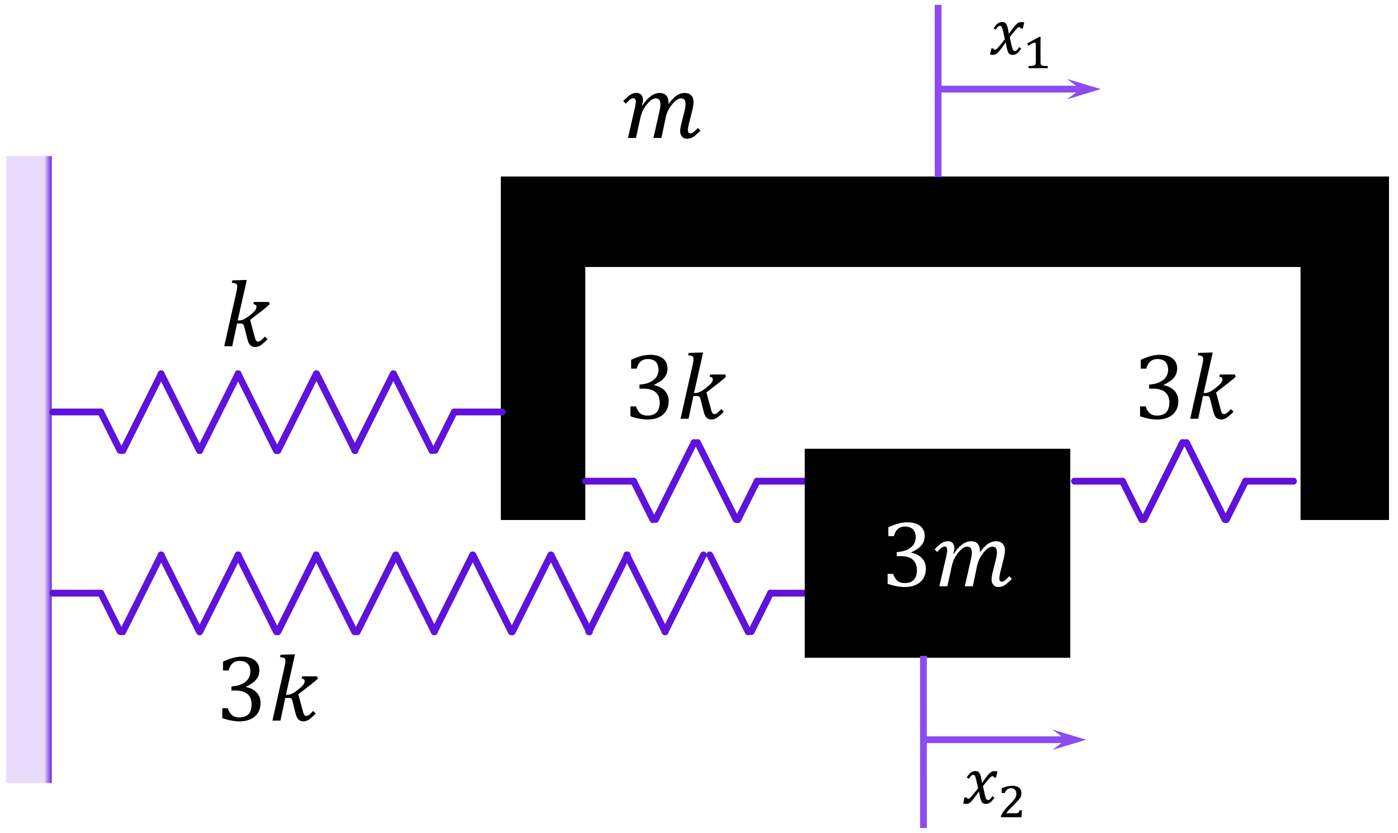
A. 1
B. 2
C. 3
D. 4
E. Je ne sais pas

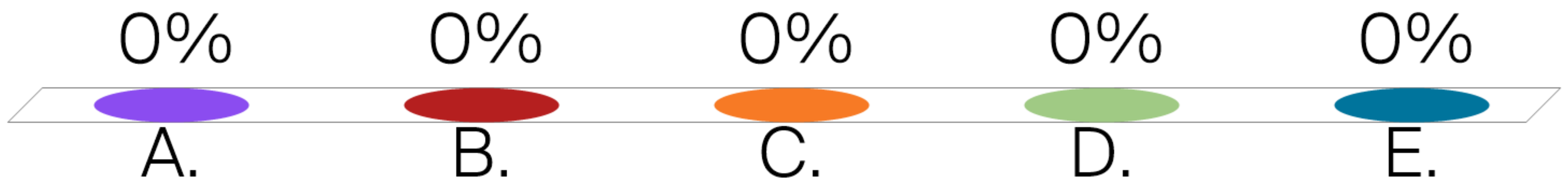




Combien Modes Normaux peut-on trouver?

A. 1
B. 2
C. 3
D. 4
E. Je ne sais pas





Si $\vec{\beta}_I = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$ et $\vec{\beta}_{II} = \begin{pmatrix} 1 \\ -1/3 \end{pmatrix}$, dans quelles C.I. le système bougera à ω_I?

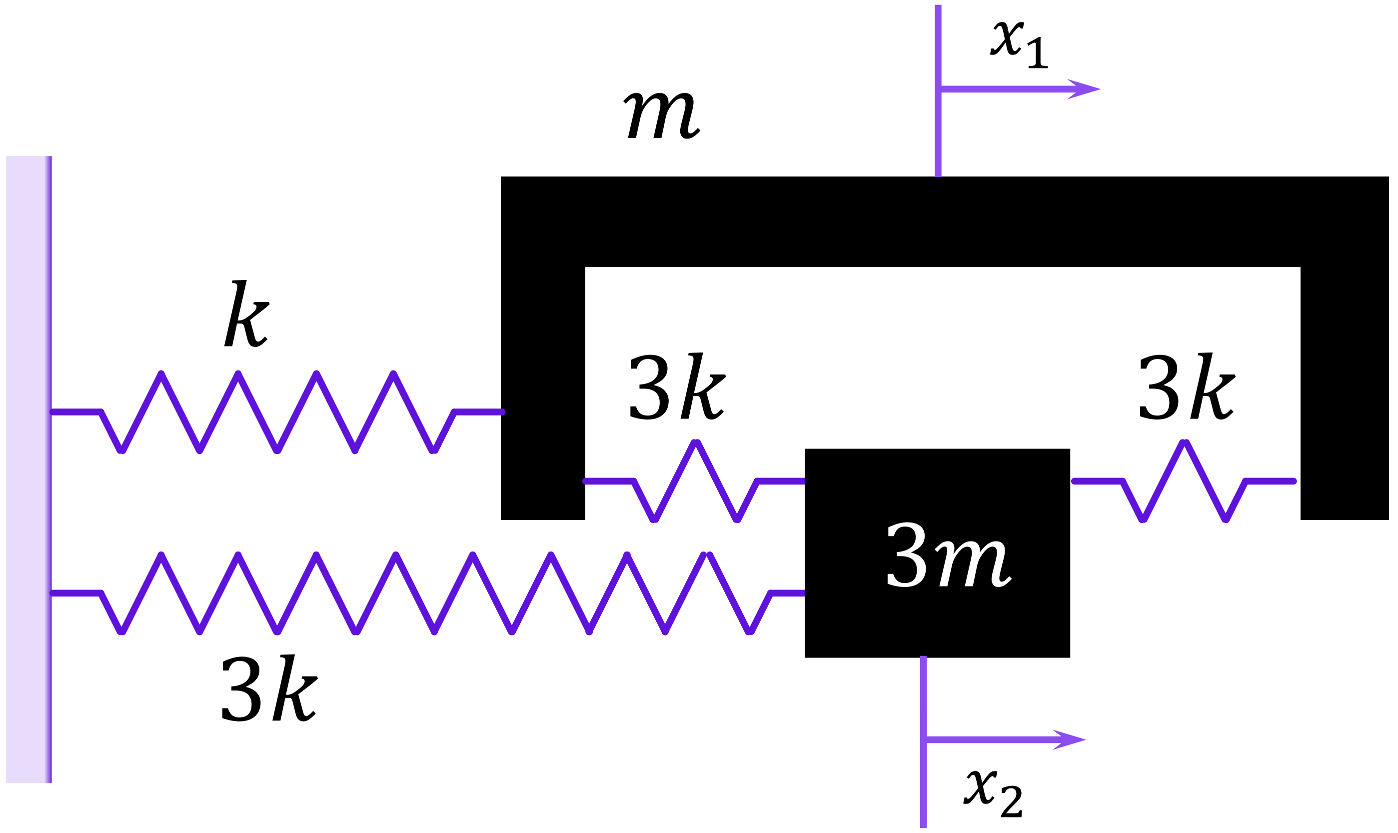
A. $x_1(0) = 1, x_2(0) = 1, \dot{x}_1(0) = \dot{x}_2(0) = 0$

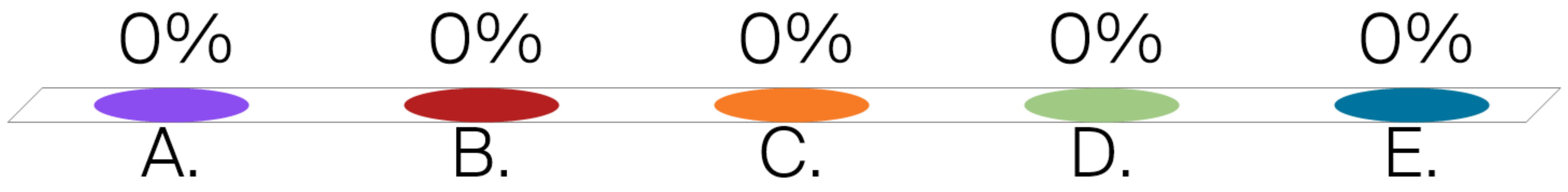
B. $x_1(0) = 1\ \mathrm{m}, x_2(0) = 1\ \mathrm{m}, \dot{x}_1(0) = \dot{x}_2(0) = 0$

C. $x_1(0) = 1\ \mathrm{m}, x_2(0) = 0, \dot{x}_1(0) = \dot{x}_2(0) = 0$

D. $x_1(0) = 0, x_2(0) = 1\ \mathrm{m}, \dot{x}_1(0) = \dot{x}_2(0) = 0$

E. Je ne sais pas





Décompose C.I. en base modale: $\dot{x}_1(0) = \dot{x}_2(0) = 0, x_1(0) = 0, x_2(0) = 1\,\mathrm{m}$?

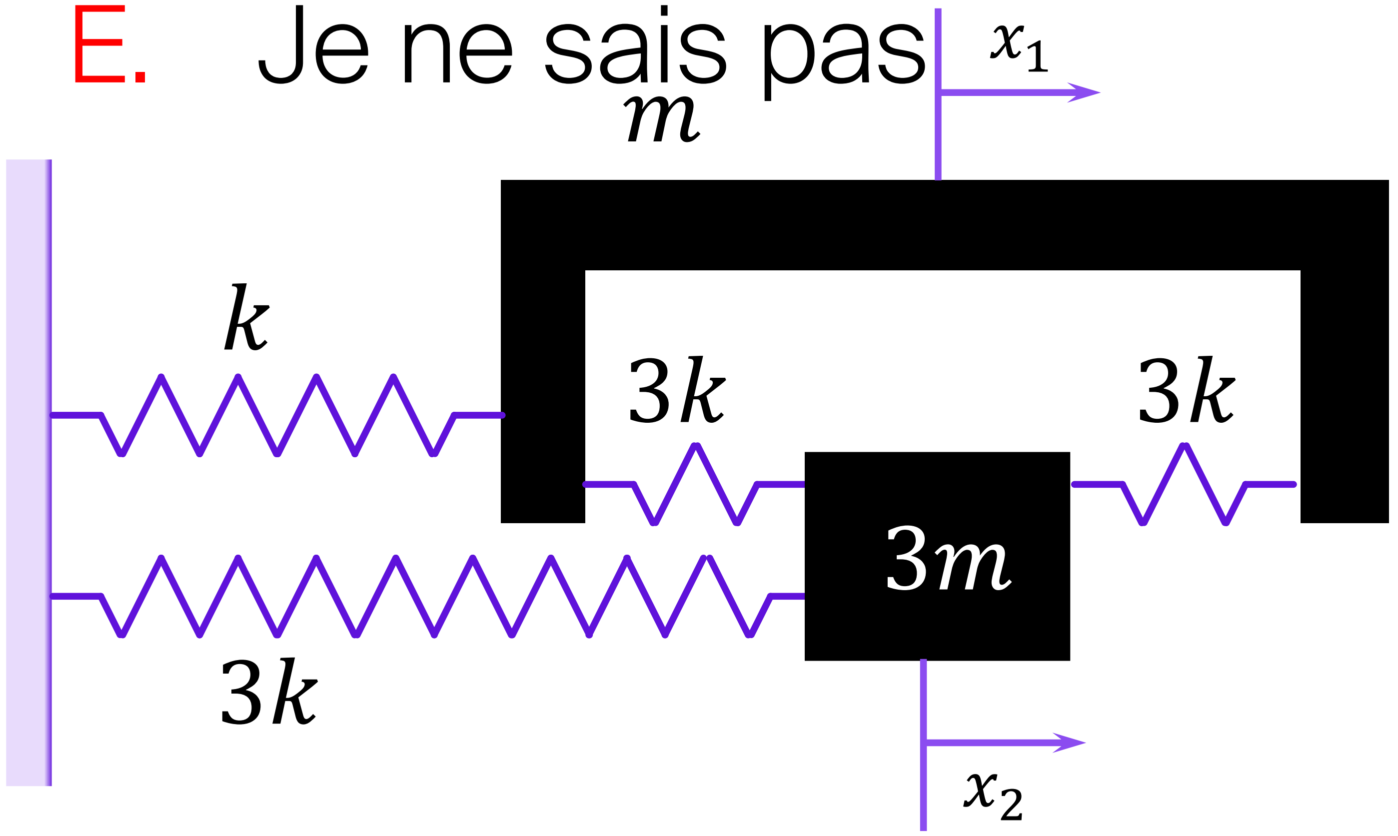
A. $\vec{x}(t=0) = \begin{pmatrix}0\\1\end{pmatrix} = \vec{\beta}_I + 3\vec{\beta}_{II}$

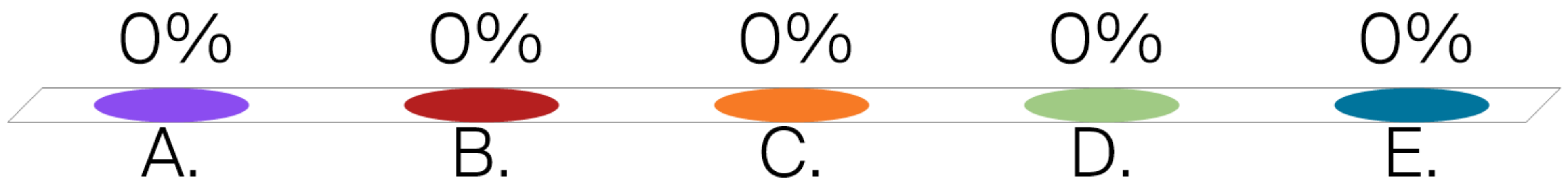
B. $\vec{x}(t=0) = \begin{pmatrix}0\\1\end{pmatrix}\mathrm{m} = 1\mathrm{m}\,\vec{\beta}_I + 3\mathrm{m}\,\vec{\beta}_{II}$

C. $\vec{x}(t=0) = \begin{pmatrix}0\\1\end{pmatrix}\mathrm{m} = \frac{2}{3}\mathrm{m}\,\vec{\beta}_I - \mathrm{m}\,\vec{\beta}_{II}$

D. $\vec{x}(t=0) = \begin{pmatrix}0\\1\end{pmatrix}\mathrm{m} = \frac{3}{2}\mathrm{m}\,\vec{\beta}_I - \frac{3}{2}\mathrm{m}\,\vec{\beta}_{II}$

E. Je ne sais pas





Evolution temporelle avec $\dot{x}_1(0) = \dot{x}_2(0) = 0$, $x_1(0) = 0, x_2(0) = 1\,\mathrm{m}$?

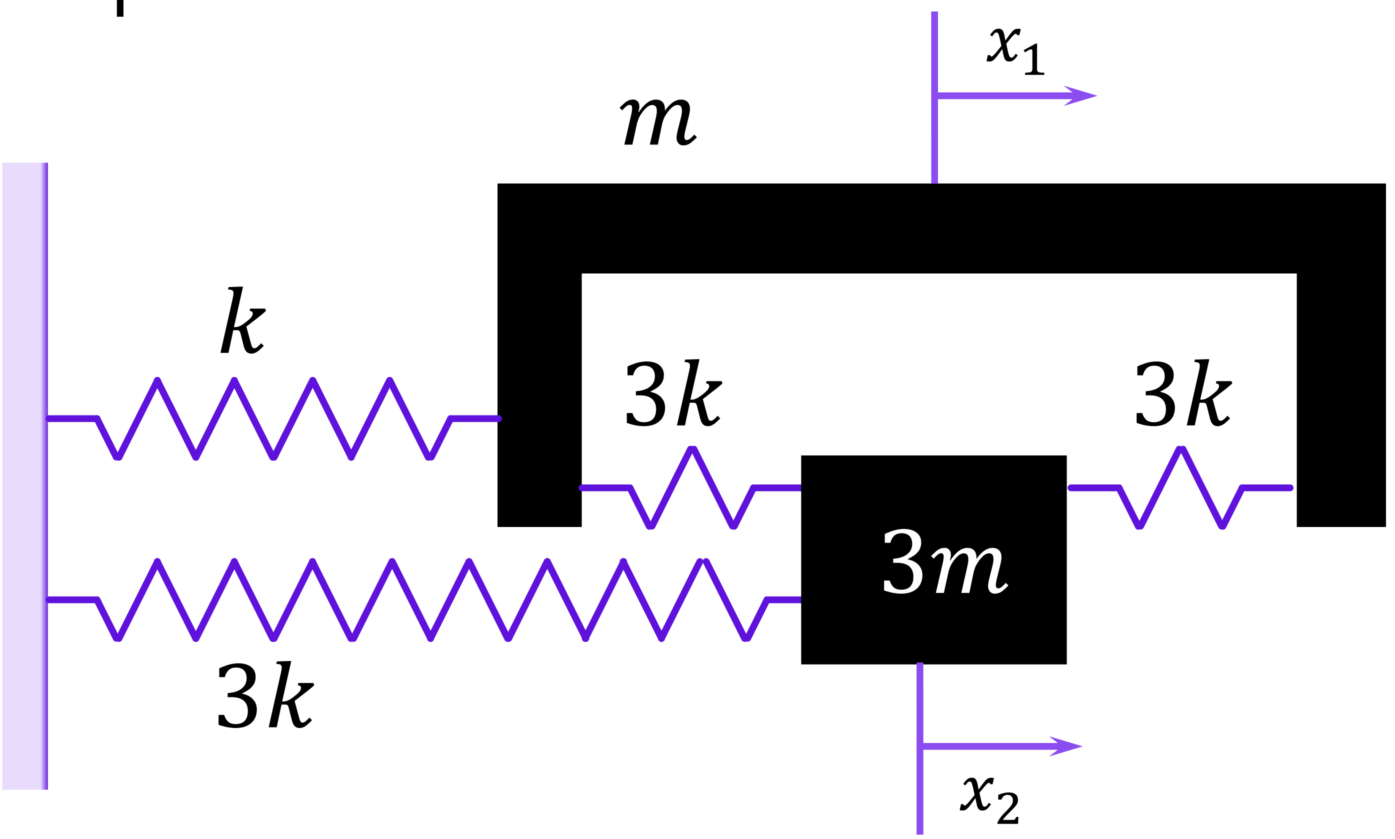
A. $\vec{x}(t) = \begin{pmatrix} 0 \\ 1\mathrm{m}\cos(\omega_0 t) \end{pmatrix}$

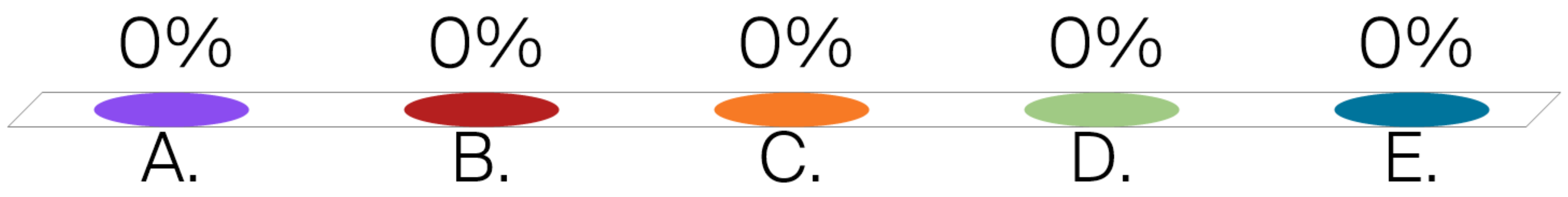
B. $\vec{x}(t) = \begin{pmatrix} 0 \\ 1\mathrm{m}\cos(\omega_{II} t) \end{pmatrix}$

C. $\vec{x}(t) = \frac{3}{2}\mathrm{m} \begin{pmatrix} \cos(\omega_I t) - \cos(\omega_{II} t) \\ \cos(\omega_I t) + \frac{1}{3}\cos(\omega_{II} t) \end{pmatrix}$

D. $\vec{x}(t) = \frac{3}{2}\mathrm{m} \begin{pmatrix} \cos(\omega_I t) - \cos(\omega_{II} t) \\ \cos(\omega_I t) - \cos(\omega_{II} t) \end{pmatrix}$

E. Je ne sais pas





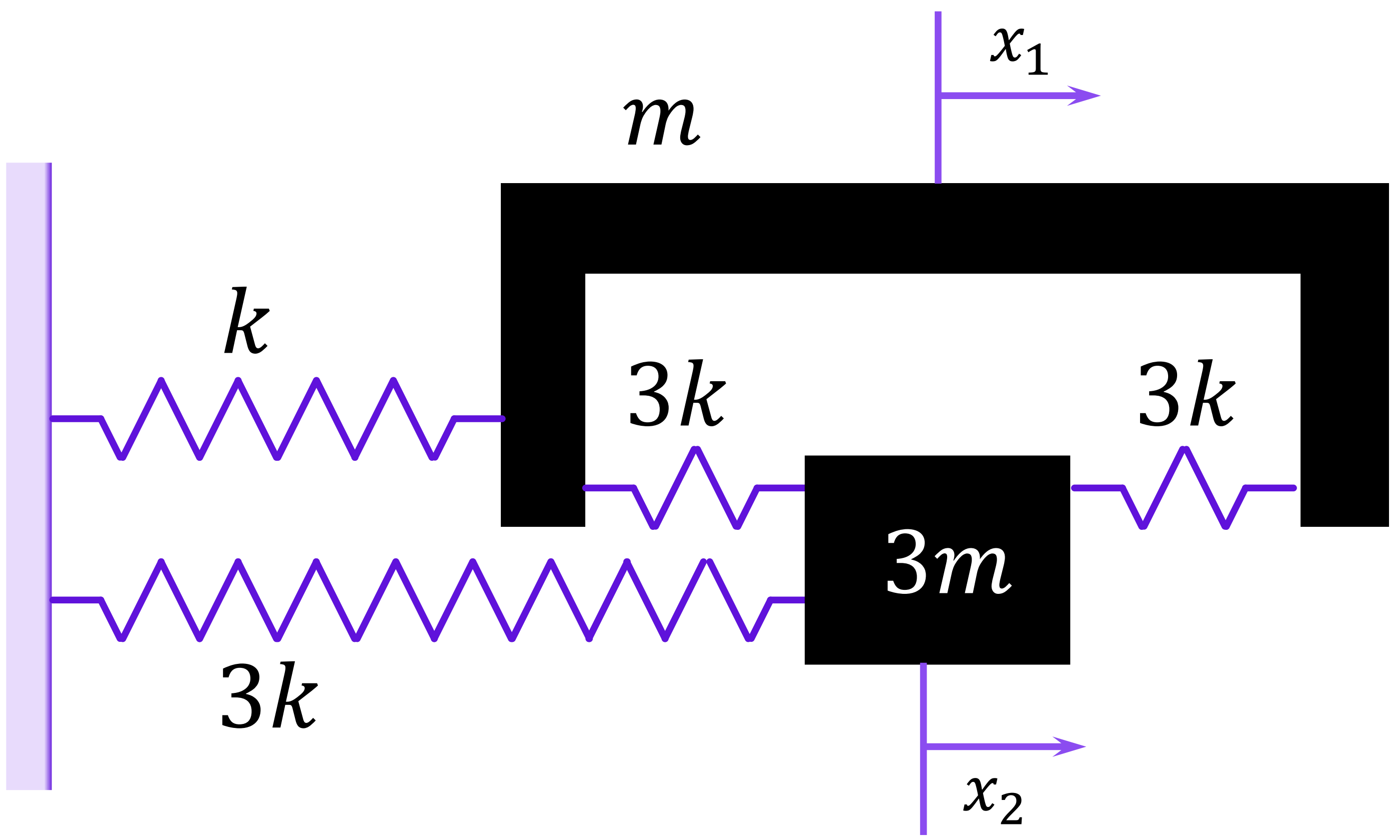
Energie Cinétique?

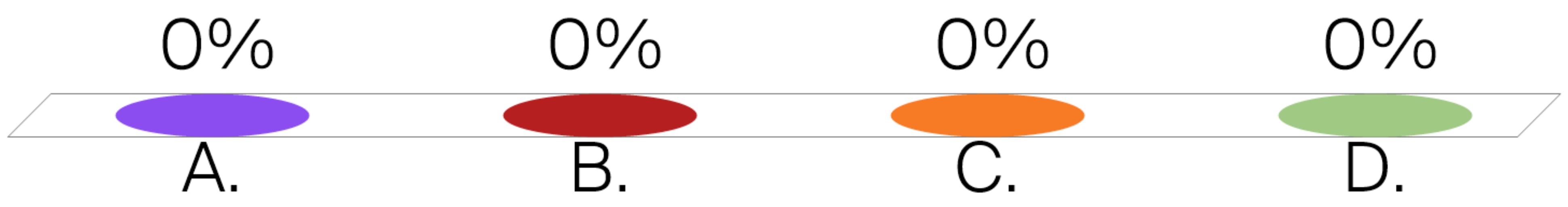
A. $T = \frac{1}{2} m\dot{x}_1^2 + \frac{1}{2} 3m\dot{x}_2^2$

B. $T = \frac{1}{2} 3m\dot{x}_1^2 + \frac{1}{2} m\dot{x}_2^2$

C. $T = \frac{1}{2} m\dot{x}_1^2 + \frac{1}{2} m\dot{x}_2^2$

D. Je ne sais pas





EPFL Energie Potentielle?

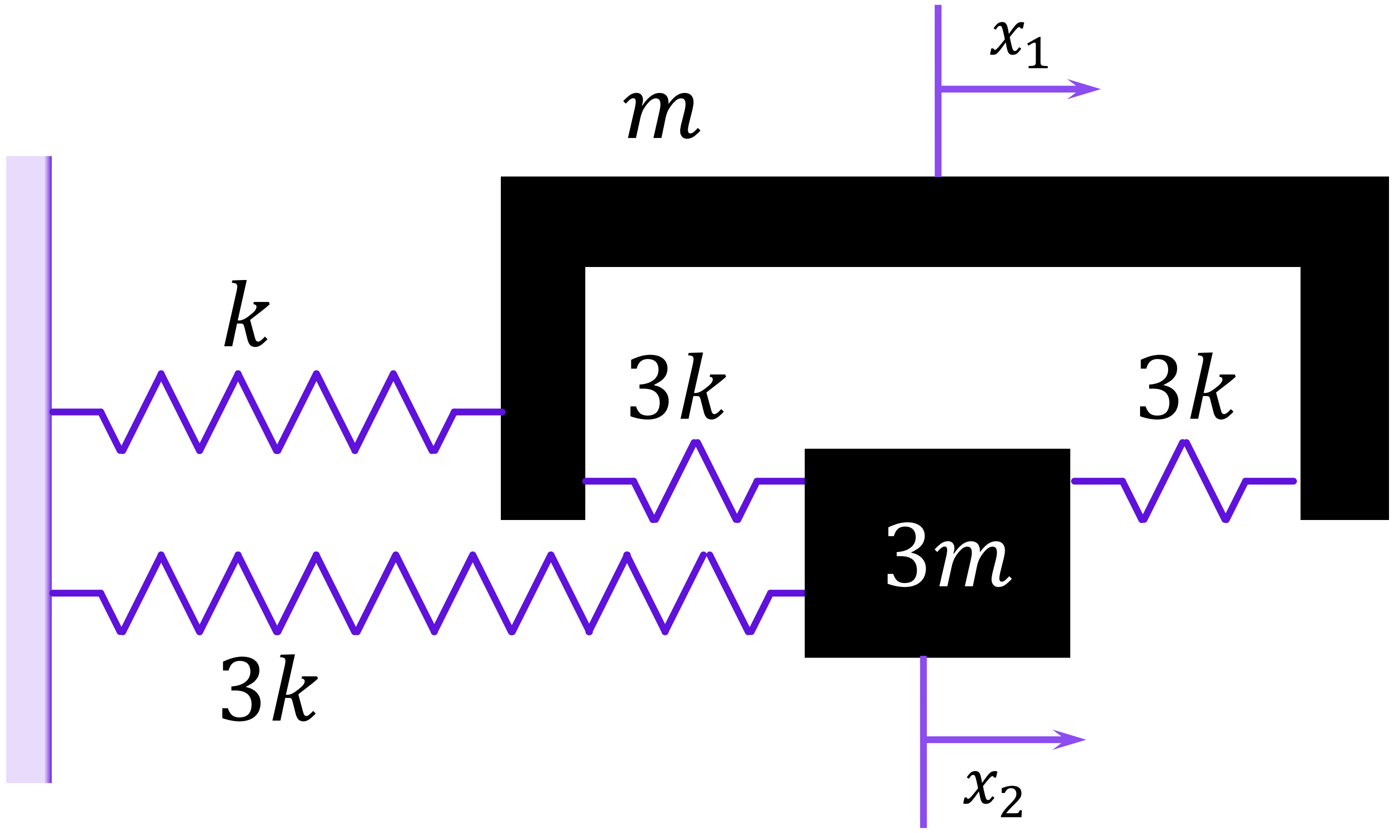
A. $V = \frac{1}{2}kx_1^2 + \frac{1}{2}kx_2^2 + \frac{1}{2}k(x_1 - x_2)^2$

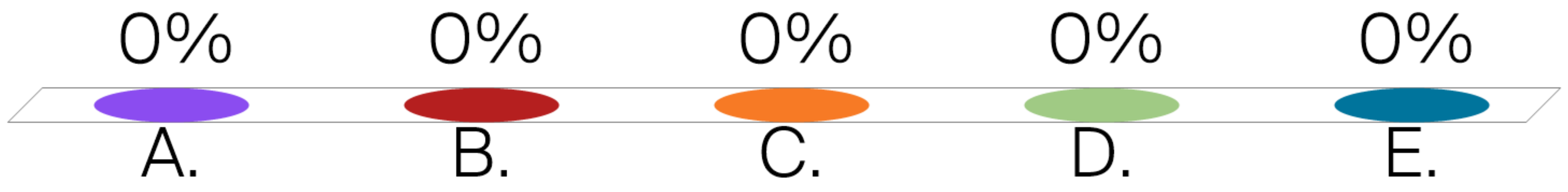
B. $V = \frac{1}{2}kx_1^2 + \frac{3}{2}kx_2^2 + 3k(x_1 - x_2)^2$

C. $V = \frac{1}{2}kx_1^2 + \frac{3}{2}kx_2^2 + 3k(x_1 + x_2)^2$

D. $V = \frac{1}{2}kx_1^2 + \frac{1}{2}kx_2^2 + k(x_1 - x_2)^2$

E. Je ne sais pas





Matrice de masse dans coordonnées x_i?

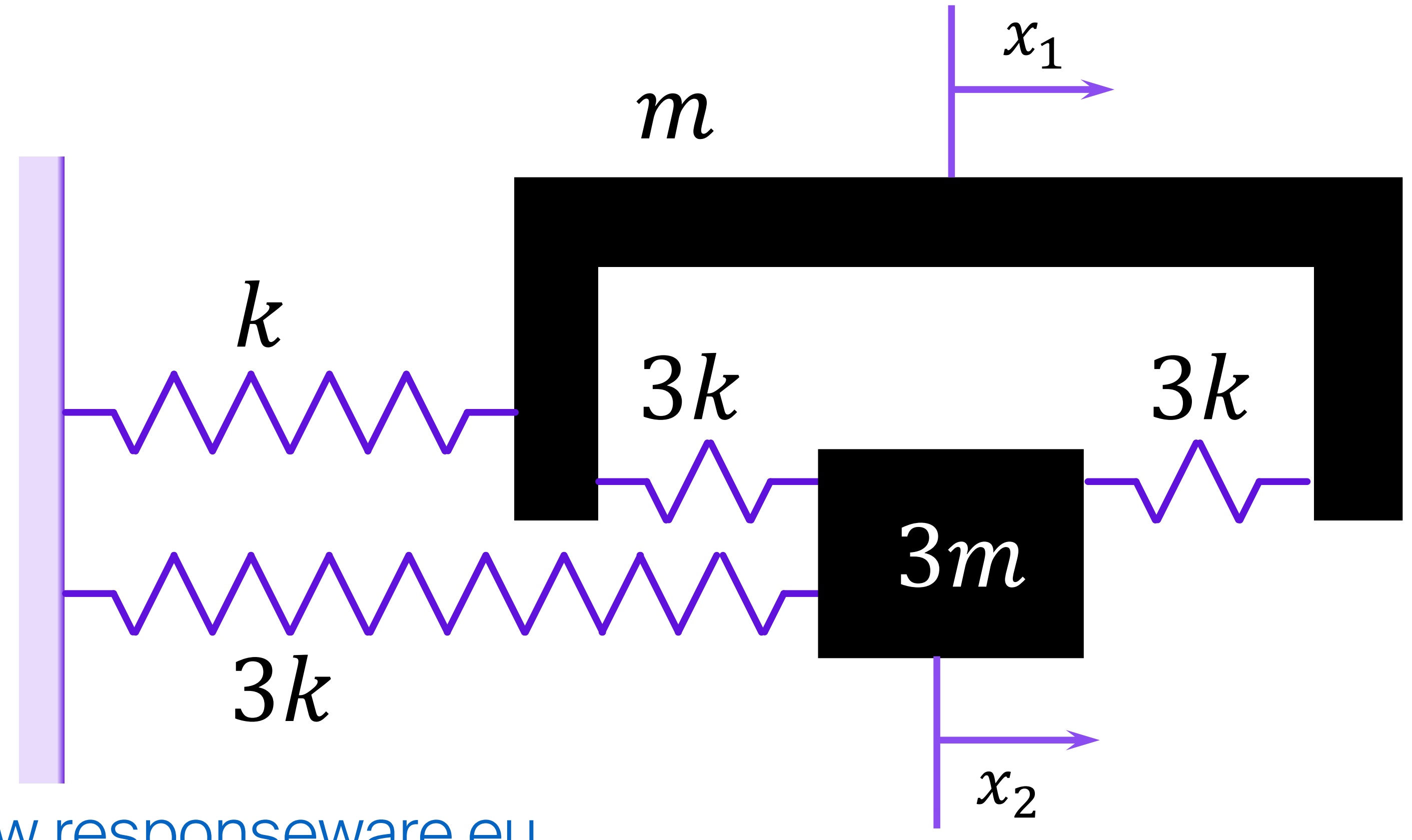
A. $\begin{pmatrix} m & 0 \\ 0 & 3m \end{pmatrix}$

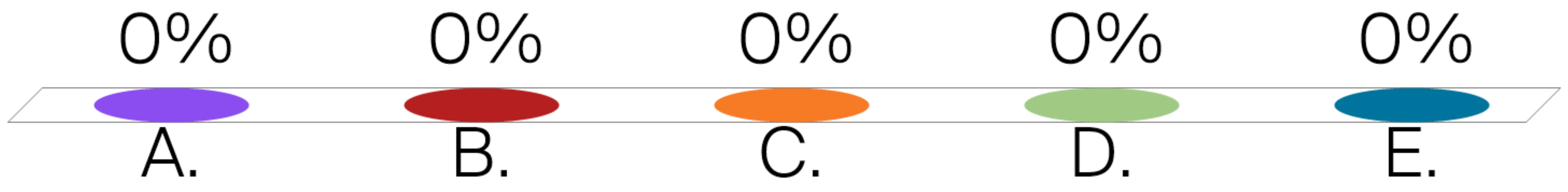
B. $\begin{pmatrix} 3m & 0 \\ 0 & m \end{pmatrix}$

C. $\begin{pmatrix} m & 0 \\ 0 & m \end{pmatrix}$

D. $\begin{pmatrix} 1 & 0 \\ 0 & 3 \end{pmatrix}$

E. Je ne sais pas





Matrice de rigidité dans coordonnées x_i?

A. $\begin{pmatrix} 7k & -6k \\ -6k & 9k \end{pmatrix}$

B. $\begin{pmatrix} 7 & -6 \\ -6 & 9 \end{pmatrix}$

C. $\begin{pmatrix} 7 & -6 \\ -6 & 9 \end{pmatrix} k$

D. $\begin{pmatrix} 7k & 6k \\ 6k & 9k \end{pmatrix}$

E. Je ne sais pas