$m_1 := 1 \qquad k_1 := 1 \qquad c_1 := 0.01 \qquad F_1 := 1$

$m_2 := 0.0174 \qquad k_2 := 0.0201 \qquad c_2 := 0.0026$

$m_3 := 0.0826 \qquad k_3 := 0.0622 \qquad c_3 := 0.0149$

$$C := \begin{bmatrix} c_1 + c_2 + c_3 & -c_2 & -c_3 \\ -c_2 & c_2 & 0 \\ -c_3 & 0 & c_3 \end{bmatrix} = \begin{bmatrix} 0.028 & -0.003 & -0.015 \\ -0.003 & 0.003 & 0 \\ -0.015 & 0 & 0.015 \end{bmatrix} \qquad F := \begin{bmatrix} F_1 \\ 0 \\ 0 \end{bmatrix}$$

$$K := \begin{bmatrix} k_1 + k_2 + k_3 & -k_2 & -k_3 \\ -k_2 & k_2 & 0 \\ -k_3 & 0 & k_3 \end{bmatrix} = \begin{bmatrix} 1.082 & -0.02 & -0.062 \\ -0.02 & 0.02 & 0 \\ -0.062 & 0 & 0.062 \end{bmatrix}$$

$$M := \begin{bmatrix} m_1 & 0 & 0 \\ 0 & m_2 & 0 \\ 0 & 0 & m_3 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0.017 & 0 \\ 0 & 0 & 0.083 \end{bmatrix} \qquad w_n := \operatorname{sort}\left(\sqrt{\operatorname{eigenvals}\left(M^{-1} \cdot K\right)}\right) = \begin{bmatrix} 0.798 \\ 1.02 \\ 1.146 \end{bmatrix}$$

$$A(w) := -M \cdot w^2 + K + 1\mathrm{i} \cdot C \cdot w$$

$$X(w) := \begin{bmatrix} \left| \left(A(w)^{-1} \cdot F\right)_0 \right| \\ \left| \left(A(w)^{-1} \cdot F\right)_1 \right| \\ \left| \left(A(w)^{-1} \cdot F\right)_2 \right| \end{bmatrix} \qquad \omega := 0, 0.001 .. 2 \qquad X_1(w) := X(w)_0$$

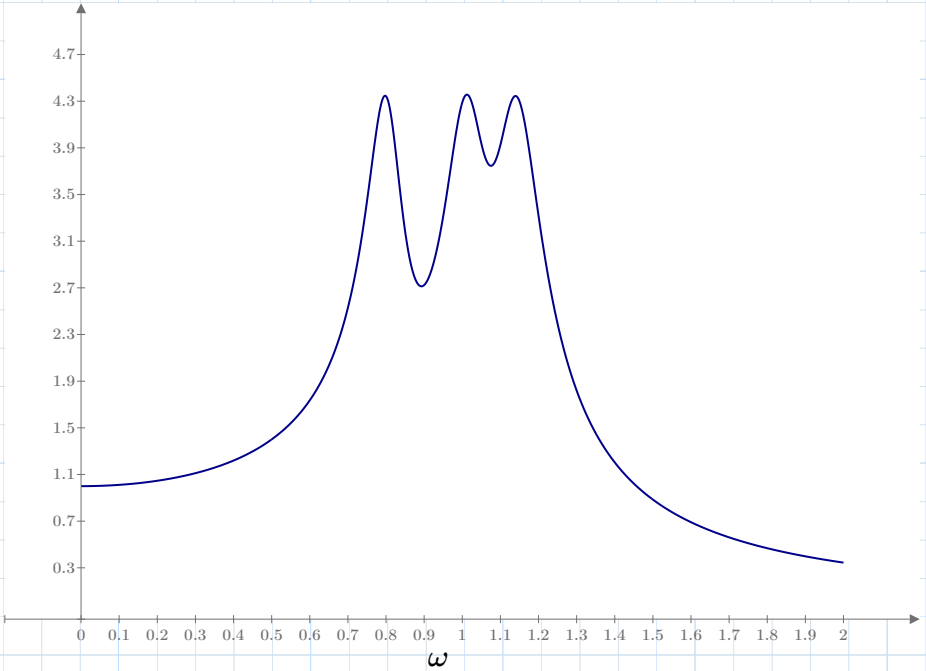
$w_i := w_{n_0} \qquad w_{max} := \mathbf{maximize}\left(X_1, w_i\right) = 0.798 \qquad X_{1max} := X_1\left(w_{max}\right) = 4.347$

$w_i := w_{n_1} \qquad w_{max} := \mathbf{maximize}\left(X_1, w_i\right) = 1.012 \qquad X_{1max} := X_1\left(w_{max}\right) = 4.356$

$w_i := w_{n_2} \qquad w_{max} := \mathbf{maximize}\left(X_1, w_i\right) = 1.14 \qquad X_{1max} := X_1\left(w_{max}\right) = 4.344$

$$A\left(w_{n_0}\right) = \begin{bmatrix} 0.446 + 0.022\mathrm{i} & -0.02 - 0.002\mathrm{i} & -0.062 - 0.012\mathrm{i} \\ -0.02 - 0.002\mathrm{i} & 0.009 + 0.002\mathrm{i} & 0 \\ -0.062 - 0.012\mathrm{i} & 0 & 0.01 + 0.012\mathrm{i} \end{bmatrix}$$

$$X\left(w_{n_0}\right) = \begin{bmatrix} 4.347 \\ 9.482 \\ 17.986 \end{bmatrix} \qquad X\left(w_{n_1}\right) = \begin{bmatrix} 4.327 \\ 26.485 \\ 9.811 \end{bmatrix} \qquad X\left(w_{n_2}\right) = \begin{bmatrix} 4.328 \\ 21.703 \\ 5.662 \end{bmatrix}$$


4.7
4.3
3.9
3.5
3.1
2.7
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1.5
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0.7
0.3
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2
ω

$X_1(\omega)$

$m_1 := 1 \quad k_1 := 1 \quad c_1 := 0.01 \quad F_1 := 1$

$m_2 := 0.0786 \quad k_2 := 0.0886 \quad c_2 := 0.0302 \quad F_2 := 0$

$m_3 := 0.0214 \quad k_3 := 0.0284 \quad c_3 := 0.0542 \quad F_3 := 0$

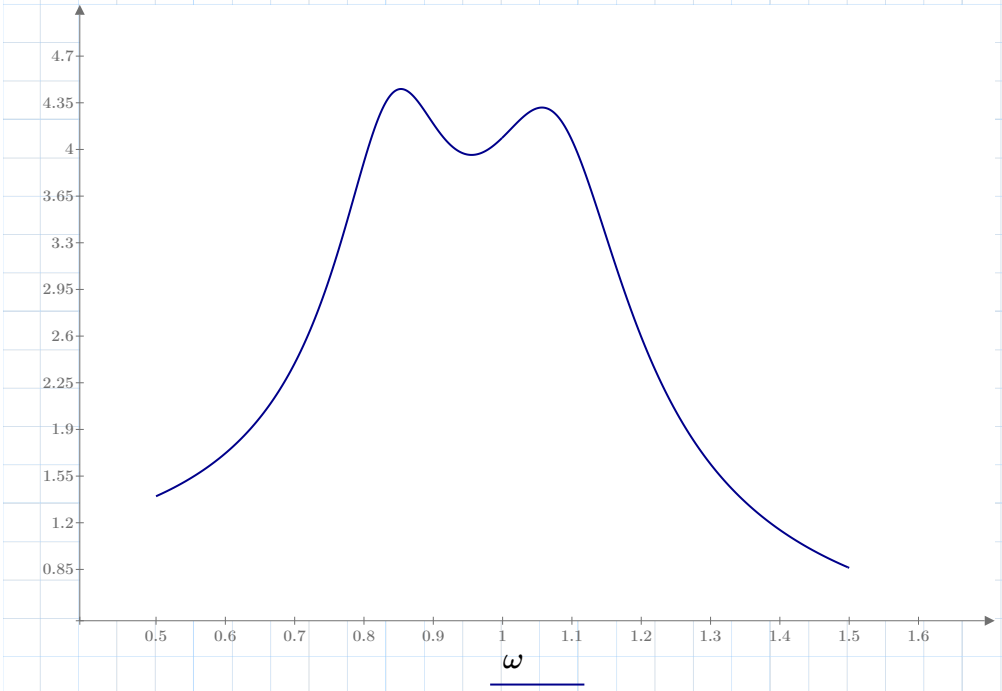
$$C := \begin{bmatrix} c_1 + c_2 & -c_2 & 0 \\ -c_2 & c_2 + c_3 & -c_3 \\ 0 & -c_3 & c_3 \end{bmatrix} = \begin{bmatrix} 0.04 & -0.03 & 0 \\ -0.03 & 0.084 & -0.054 \\ 0 & -0.054 & 0.054 \end{bmatrix} \qquad F := \begin{bmatrix} F_1 \\ F_2 \\ F_3 \end{bmatrix}$$

$$K := \begin{bmatrix} k_1 + k_2 & -k_2 & 0 \\ -k_2 & k_2 + k_3 & -k_3 \\ 0 & -k_3 & k_3 \end{bmatrix} = \begin{bmatrix} 1.089 & -0.089 & 0 \\ -0.089 & 0.117 & -0.028 \\ 0 & -0.028 & 0.028 \end{bmatrix}$$

$$M := \begin{bmatrix} m_1 & 0 & 0 \\ 0 & m_2 & 0 \\ 0 & 0 & m_3 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0.079 & 0 \\ 0 & 0 & 0.021 \end{bmatrix} \qquad w_n := \operatorname{sort}\left(\sqrt{\operatorname{eigenvals}\left(M^{-1} \cdot K\right)}\right) = \begin{bmatrix} 0.781 \\ 1.065 \\ 1.469 \end{bmatrix}$$

$$A(w) := -M \cdot w^2 + K + 1\mathrm{i} \cdot C \cdot w$$

$$X(w) := \begin{bmatrix} \left| \left(A(w)^{-1} \cdot F\right)_0 \right| \\ \left| \left(A(w)^{-1} \cdot F\right)_1 \right| \\ \left| \left(A(w)^{-1} \cdot F\right)_2 \right| \end{bmatrix} \qquad \omega := 0.5, 0.501 .. 1.5 \qquad X_1(w) := X(w)_0$$


4.7
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4
3.65
3.3
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0.7
0.8
0.9
1
1.1
1.2
1.3
1.4
1.5
1.6
ω
$X_1(\omega)$