

$$m = \begin{pmatrix} 11.604 & 4.015 & 33.317 & 1.016 \\ 4.015 & 3.632 & 7.501 & 3.363 \\ 33.317 & 7.501 & 89.521 & 0.406 \\ 1.016 & 3.363 & 0.406 & 0.017 \end{pmatrix}$$

$$c = \begin{pmatrix} 202.367 & 580.048 & 13.573 & 30.415 \\ 70.048 & 1.258 \times 10^3 & -34.403 & 92.74 \\ 0 & 1.039 \times 10^3 & 0 & -4.151 \times 10^{-3} \\ -31.819 & -85.313 & -2.134 & -6.558 \end{pmatrix}$$

$$k = \begin{pmatrix} 0 & 0 & -509 & -2.334 \times 10^3 \\ 0 & 0 & -178.001 & -7.157 \times 10^3 \\ 0 & 0 & -1.073 \times 10^3 & -91.29 \\ 0 & 0 & -11.11 & 845.36 \end{pmatrix}$$

$$\left| \lambda^2 \cdot (m) + \lambda \cdot (c) + (k) \right| = 0$$

$$\begin{pmatrix} 202.367 \cdot \lambda + 11.604 \cdot \lambda^2 & 4.015 \cdot \lambda^2 + 580.048 \cdot \lambda & 13.573 \cdot \lambda + 33.317 \cdot \lambda^2 - 509 & 30.415 \cdot \lambda + 1.016 \cdot \lambda^2 - 2334.0 \\ 4.015 \cdot \lambda^2 + 70.048 \cdot \lambda & 3.632 \cdot \lambda^2 + 1258.0 \cdot \lambda & -34.403 \cdot \lambda + 7.501 \cdot \lambda^2 - 178.001 & 92.74 \cdot \lambda + 3.363 \cdot \lambda^2 - 7157.0 \\ 33.317 \cdot \lambda^2 & 7.501 \cdot \lambda^2 + 1039.0 \cdot \lambda & 89.521 \cdot \lambda^2 - 1073.0 & -0.004151 \cdot \lambda + 0.406 \cdot \lambda^2 - 91.29 \\ 1.016 \cdot \lambda^2 + -31.819 \cdot \lambda & -85.313 \cdot \lambda + 3.363 \cdot \lambda^2 & -2.134 \cdot \lambda + 0.406 \cdot \lambda^2 - 11.11 & -6.558 \cdot \lambda + 0.017 \cdot \lambda^2 + 845.36 \end{pmatrix} = 0$$

$$1213.515473546798 \cdot \lambda^8 - 201175.92631943055918 \cdot \lambda^7 - 3.6789475372587478505e6 \cdot \lambda^6 + 5.4068977443711340121e8 \cdot \lambda^5 + 3.0490980843824366522e9 \cdot \lambda^4$$

$$- 2.0463082067682408635e9 \cdot \lambda^3 + 2.1347314282755562065e9 \cdot \lambda^2 = 0$$

$$\lambda := \begin{pmatrix} 0 \\ 0 \\ 167.46198821311370941 \\ 54.142909998620960686 \\ -6.1853552513031899936 \\ -50.335343706867020463 \\ 0.3476247751013084747 + 0.70874613316585566999i \\ 0.3476247751013084747 - 0.70874613316585566999i \end{pmatrix}$$

