# Hyperbolic quadratic eigenvalue problem and frequency isolation

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The solution of the forced system undergo large oscillations whenever some eigenvalue of the corresponding quadratic eigenvalue problem

$$\left( \lambda^2 M + \lambda C + K \right) x = 0, \quad 0 \neq x \in \mathbb{C}^n,$$

is close to the frequency of the external force. One way to avoid resonance is to modify matrices $M$, $C$ and $K$ in such a way that the new system has no eigenvalues close to these frequencies. This frequency isolation problem is considered for the hyperbolic QEP.