$$\begin{bmatrix} \dot{x}1 \\ \dot{x}2 \\ \ddot{x}1 \\ \ddot{x}2 \end{bmatrix} = \begin{bmatrix} 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ -\frac{(cr+cf)}{m1} & \frac{cf}{m1} & \frac{-d}{m1} & \frac{d}{m1} \\ \frac{cf}{m2} & \frac{-cf}{m2} & \frac{d}{m2} & \frac{-d}{m2} \end{bmatrix} * \begin{bmatrix} x1 \\ x2 \\ \dot{x}1 \\ \dot{x}2 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ \frac{f1}{m1} \\ \frac{f2}{m2} \end{bmatrix} \qquad f1 = cr * xe * \sin(\Omega * t)$$

$$\dot{x}1 = \dot{x}1$$

$$\dot{x}2 = \dot{x}2$$

$$\ddot{x}1 = -\frac{(cr+cf)}{m1} * x1 + \frac{cf}{m1} * x2 - \frac{d}{m1} * \dot{x}1 + \frac{d}{m1} * \dot{x}2 + \frac{cr * xe * \sin(\Omega * t)}{m1}$$

$$\ddot{x}2 = -\frac{cf}{m2} * x1 - \frac{cf}{m2} * x2 + \frac{d}{m2} * \dot{x}1 - \frac{d}{m2} * \dot{x}2 + \frac{f2}{m2}$$