?
??
??
??
?
?
???
?????
??
????
?
$_{a}mbMecos201915kW54000/Calnetixfig: industrial_{a}mb125kW26500/SKF75350kWfig: industrial_{a}mb40000/15kHz$
$_{s}^{mb}$???
????
??
?
?
???
?????????
??????
?
???
??
$_{p}$ara
$GCl_{bA}l_{bB}l_{sA}l_{sB}O-$
$xyzOxy\alpha\beta\Omega$
$CO-$
$xyz\boldsymbol{q}_i =$
$[\beta_i, x_i, -\alpha_i, y_i]^T GO-$
$xyz\boldsymbol{q}_g =$
$[\beta_g, x_g, -\alpha_g, y_g]^T \boldsymbol{q}_s =$
$[x_{sA}, x_{sB}, y_{sA}, y_{sB}]^T \boldsymbol{q}_b =$
$[x_{bA}, x_{bB}, y_{bA}, y_{bB}]^T$
$O-$
$zO-$
$xO-$
$y\boldsymbol{q}_b\boldsymbol{q}_g\boldsymbol{q}_s$

$$\boldsymbol{q}_b = \boldsymbol{B}^T \boldsymbol{q}_g \tag{1}$$

$$\boldsymbol{q}_s = \boldsymbol{C}\boldsymbol{q}_g \tag{2}$$

$\boldsymbol{B} =$
$\begin{bmatrix} -l_{bA}l_{bB} & 0 & 0 \\ 1 & 1 & 0 & 0 \\ 0 & 0 & -l_{bA}l_{bB} \\ 0 & 0 & 1 & 1 \end{bmatrix}$
$\boldsymbol{C} =$
$\begin{bmatrix} -l_{sA}1 & 0 & 0 \\ l_{bB} & 1 & 0 & 0 \\ 0 & 0 - l_{bA}1 \\ 0 & 0 & l_{bB} & 1 \end{bmatrix}$
f_m

$$f_m = k_s x + k_i i \tag{3}$$

$k_s k_i k s_A =$
$k_{sB} =$
$k_s k_{iA} =$
$k_{iB} =$
k_i

$$M\ddot{q}_i + G\dot{q}_i = -BK_sB^T q_i + BK_i i \tag{4}$$

MGK_sK_ii

$M = [\, I_y\, 0000m0000I_x0000m$

$G = \Omega\, [\, 0\, 0I_z00000 - I_z0000000]$

$K_s = [\, K_{sA}\, 0000K_{sB}0000K_{sA}0000K_{sB}$

$K_i = [\, K_{iA}\, 0000K_{iB}0000K_{iA}0000K_{iB}$

$i = [\, i_{xA}\, 0000i_{xB}0000i_{yA}0000i_{yB}$

$_{x}I_yI_zxyz$
$l_b \quad 0.08m$
$l_s \quad 0.12m$
$l_c \quad 0.14m$
$m \quad 3.9kg$
$k \quad 2.38 \times 10^5\, N/m$