Contents


```
function [I,rec,rae,m,G] = parameter()
```

```
%  Berechnung konstante Parameter
```

Vorwärtskinematik für die Ausgangsstellung

```
    [T,~] = dhtrafo(0, 0, 0, 0, 0, 0);

    T01 = T(:,:,1);
    T12 = T(:,:,1);
    T23 = T(:,:,1);
    T34 = T(:,:,1);
    T45 = T(:,:,1);
    T56 = T(:,:,1);

    T06 = T01*T12*T23*T34*T45*T56;
    T05 = T01*T12*T23*T34*T45;
    T04 = T01*T12*T23*T34;
    T03 = T01*T12*T23;
    T02 = T01*T12;

    R01 = T01(1:3,1:3);
    R02 = T02(1:3,1:3);
    R03 = T03(1:3,1:3);
    R04 = T04(1:3,1:3);
    R05 = T05(1:3,1:3);
    R06 = T06(1:3,1:3);
```

Trägheitsmoment I_i^0 am Massezentrum in kg mm^2

```
    I1xx = 17.298;
    I1xy = -2.711;
    I1xz = 1.672;
    I1yx = -2.711;
    I1yy = 32.671;
    I1yz = -0.493;
    I1zx = 1.672;
    I1zy = -0.493;
    I1zz = 29.447;

    I2xx = 138.135;
    I2xy = -0.012;
    I2xz = 0.387;
```

```
I2yx = -0.012;
I2yy = 136.664;
I2yz = 9.231;
I2zx = 0.387;
I2zy = 9.231;
I2zz = 11.838;

I3xx = 3.031;
I3xy = -1.386;
I3xz = -0.045;
I3yx = -1.386;
I3yy = 30.03;
I3yz = -0.21;
I3zx = -0.045;
I3zy = -0.21;
I3zz = 29.693;

I4xx = 0.099;
I4xy = -0.032;
I4xz = -0.001;
I4yx = -0.032;
I4yy = 0.701;
I4yz = -9.367E-06;
I4zx = -0.001;
I4zy = -9.367E-06;
I4zz = 0.698;

I5xx = 0.481;
I5xy = 0.118;
I5xz = 0.00;
I5yx = 0.118;
I5yy = 0.424;
I5yz = 0.00;
I5zx = 0.00;
I5zy = 0.00;
I5zz = 0.675;

I6xx = 0.011;
I6xy = 5.143E-07;
I6xz = -2.003E-06;
I6yx = 5.143E-07;
I6yy = 0.006;
I6yz = 1.220E-07;
I6zx = -2.003E-06;
I6zy = 1.220E-07;
I6zz = 0.006;

% Ähnlichkeitstransformation zur Umrechung in die Körperfesten
% Koordinatensysteme

I1base = [      I1xx,   I1xy,   I1xz;
                I1yx,   I1yy,   I1yz;
                I1zx,   I1zy,   I1zz];

I1 = R01'*I1base*R01;

I2base = [      I2xx,   I2xy,   I2xz;
                I2yx,   I2yy,   I2yz;
                I2zx,   I2zy,   I2zz];

I2 = R02'*I2base*R02;
```

```
I3base = [      I3xx,   I3xy,   I3xz;
                I3yx,   I3yy,   I3yz;
                I3zx,   I3zy,   I3zz];

I3 = R03'*I3base*R03;

I4base = [      I4xx,   I4xy,   I4xz;
                I4yx,   I4yy,   I4yz;
                I4zx,   I4zy,   I4zz];

I4 = R04'*I4base*R04;

I5base = [      I5xx,   I5xy,   I5xz;
                I5yx,   I5yy,   I5yz;
                I5zx,   I5zy,   I5zz];

I5 = R05'*I5base*R05;

I6base = [      I6xx,   I6xy,   I6xz;
                I6yx,   I6yy,   I6yz;
                I6zx,   I6zy,   I6zz];

I6 = R06'*I6base*R06;

I = cat(3,I1,I2,I3,I4,I5,I6);
```

Lage der Massenschwerpunkte im Intertialkoordinatensystem KS{0}

```
com1 = [-30.103; 4.41; 452.213]/1000;
com2 = [330.979; -222.585; 1094.239]/1000;
com3 = [705.894; -8.126; 1908.436]/1000;
com4 = [1383.185; 4.492; 1909.983]/1000;
com5 = [1601.767; 33.833; 1909.955]/1000;
com6 = [1743.222; -0.007; 1910.051]/1000;
```

r^i_{i,C_i}

```
r1e_c1 = (T01)\[com1;1]; r1e_c1 = r1e_c1(1:3,1);
r2e_c2 = (T02)\[com2;1]; r2e_c2 = r2e_c2(1:3,1);
r3e_c3 = (T03)\[com3;1]; r3e_c3 = r3e_c3(1:3,1);
r4e_c4 = (T04)\[com4;1]; r4e_c4 = r4e_c4(1:3,1);
r5e_c5 = (T05)\[com5;1]; r5e_c5 = r5e_c5(1:3,1);
r6e_c6 = (T06)\[com6;1]; r6e_c6 = r6e_c6(1:3,1);

rec= cat(3, r1e_c1, r2e_c2, r3e_c3, r4e_c4, r5e_c5, r6e_c6);
```

$r^i_{i-1,i}$

```
r1a_e = -inv(T01); r1a_e = r1a_e(1:3,4);
r2a_e = -inv(T12); r2a_e = r2a_e(1:3,4);
r3a_e = -inv(T23); r3a_e = r3a_e(1:3,4);
r4a_e = -inv(T34); r4a_e = r4a_e(1:3,4);
r5a_e = -inv(T45); r5a_e = r5a_e(1:3,4);
r6a_e = -inv(T56); r6a_e = r6a_e(1:3,4);

rae = cat(3, r1a_e, r2a_e, r3a_e, r4a_e, r5a_e, r6a_e);
```

Masse m_i

```
m1 = 535;
m2 = 696.3;
m3 = 361.6;
m4 = 39.676;
m5 = 53.619;
m6 = 4.528;
m =  [m1,m2,m3,m4,m5,m6];
```

Getriebe-Übersetzung i_i

```
i1 = -7/1798;
i2 = 17/4576;
i3 = 3/754;
i4 = -55/10387;
i5 = -483/91834;
i6 = 49400/6485103;
G = [i1, i2, i3, i4, i5, i6];
```

```
end
```

```
ans(:,:,1) =

   17.2980   -1.6720   -2.7110
   -1.6720   29.4470    0.4930
   -2.7110    0.4930   32.6710


ans(:,:,2) =

  138.1350    0.0120   -0.3870
    0.0120  136.6640    9.2310
   -0.3870    9.2310   11.8380


ans(:,:,3) =

    3.0310   -0.0450    1.3860
   -0.0450   29.6930    0.2100
    1.3860    0.2100   30.0300


ans(:,:,4) =

    0.0990   -0.0320   -0.0010
   -0.0320    0.7010   -0.0000
   -0.0010   -0.0000    0.6980


ans(:,:,5) =

    0.4810    0.0000    0.1180
    0.0000    0.6750   -0.0000
    0.1180   -0.0000    0.4240
```

```
ans(:,:,6) =

    0.0110   -0.0000    0.0000
   -0.0000    0.0060    0.0000
    0.0000    0.0000    0.0060
```

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