```
Parameters
\mathtt{syms} \ \texttt{C\_1} \ \texttt{C\_2} \ \texttt{C\_3} \ \texttt{C\_4} \ \texttt{C\_5} \ \texttt{C\_6} \ \texttt{C\_7} \ \texttt{C\_8} \ \texttt{C\_9} \ \texttt{C\_10} \ \texttt{C\_11} \ \texttt{C\_12} \ \texttt{C\_13} \ \texttt{C\_14} \ \texttt{C\_15}
F = [(((1-L1)+(((L1 * (1-r1)) * ((1-r1) * 1 + 0)) * (((1 - 2 * ((X1H12)/
3)))))+(((L1 * r1) * (1-r1) * 1) * ((((X2)/3))+(((X2)/3))))+(((L1 * r1) *
(r1 * 1 + 0)) * (((1 - 2 * ((H11X3)/3)))))*((1-r2))+((1-L1)+(((L1 * (1-r1))))))
* ((1-r1) * 1 + 0)) * (((1 - 2 * ((H12)/3)))))+(((L1 * r1) * (1-r1) * 1)
* ((((X1X2)/3))+(((X1X2)/3))))+(((L1 * r1) * (r1 * 1 + 0)) * (((1 - 2 *
((H11X3)/3)))))*(r2))-C_1,
(((((L1 * (1-r1)) * ((1-r1) * 1 + 0)) * ((((X1H12)/3))))+(((L1 * r1) * (1-r1)
* 1) * (((1 - 2 * ((X2)/3)))+(((X2)/3))))+(((L1 * r1) * (r1 * 1 + 0)) *
((((H11X3)/3))))*((1-r2))+(((L1 * (1-r1)) * ((1-r1) * 1 + 0)) * (((H12)/
3))))+(((L1 * r1) * (1-r1) * 1) * (((1 - 2 * ((X1X2)/3)))+(((X1X2)/3))))+
(((L1 * r1) * (r1 * 1 + 0)) * ((((H11X3)/3)))))*(r2))-C_2,
(((((L1 * (1-r1)) * ((1-r1) * 1 + 0)) * ((((X1H12)/3))))+(((L1 * r1) * (1-r1)
* 1) * ((((X2)/3))+((1 - 2 * ((X2)/3)))))+(((L1 * r1) * (r1 * 1 + 0)) *
3))))+(((L1 * r1) * (1-r1) * 1) * ((((X1X2)/3))+((1 - 2 * ((X1X2)/3))))+
(((L1 * r1) * (r1 * 1 + 0)) * ((((H11X3)/3))))*(r2))-C_3,
(((((L1 * (1-r1)) * ((1-r1) * 1 + 0)) * ((((X1H12)/3))))+(((L1 * r1) * (1-r1)
* 1) * (((1 - 2 * ((X2X3)/3)))+(((X2X3)/3))))+(((L1 * r1) * (r1 * 1 + 0)) *
((((H11)/3))))*((1-r2))+(((L1 * (1-r1)) * ((1-r1) * 1 + 0)) * ((((H12)/3))))
+(((L1 * r1) * (1-r1) * 1) * (((1 - 2 * ((X1X2X3)/3)))+(((X1X2X3)/3))))+(((L1
* r1) * (r1 * 1 + 0)) * ((((H11)/3)))))*(r2))-C_5,
(((((L1 * (1-r1)) * ((1-r1) * 1 + 0)) * ((((X1H12)/3))))+(((L1 * r1) * (1-r1)
* 1) * ((((X2X3)/3))+((1 - 2 * ((X2X3)/3))))+(((L1 * r1) * (r1 * 1 + 0)) *
((((H11)/3))))*((1-r2))+(((L1 * (1-r1)) * ((1-r1) * 1 + 0)) * ((((H12)/3))))
+(((L1 * r1) * (1-r1) * 1) * ((((X1X2X3)/3))+((1 - 2 * ((X1X2X3)/3)))))+(((L1
* r1) * (r1 * 1 + 0)) * ((((H11)/3)))))*(r2))-C_6,
((((1 - 2 * ((X2)/3)))*((1-r1))+(((X3)/3))*(r1))*((1-r2))+(((1 - 2 * ((X1X2)/3))*((1-r2)))*(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+((((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+(((1-r2))+((
3)))*((1-r1))+(((X3)/3))*(r1))*(r2))-C_13,
((((((X2)/3))*((1-r1))+(((X3)/3))*(r1))*((1-r2))+((((X1X2)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*(((X3)/3))+(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((X3)/3))*(((
3))*(r1))*(r2))-C_14,
((1-L1)+(((L1 * (1-r1)) * ((1-r1) * 1 + 0)) * (((1 - 2 * ((X1X2H12)/3)))))+
(((L1 * r1) * (1-r1) * 1) * ((((X3)/3))+(((X3)/3))))+(((L1 * r1) * (r1 * 1 + r1)))
0)) * (((1 - 2 * ((H11)/3)))))-C_7,
((((1 - 2 * ((X2)/3)))*((1-r1))+(((X3)/3))*(r1))*((1-r2))+(((1 - 2 * ((X1X2)/2))*((1-r2)))*((1-r2))+(((1 - 2 * ((X1X2)/2))*((1-r2)))*((1-r2)))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((1-r2))*((
3)))*((1-r1))+(((X3)/3))*(r1))*(r2))-C_10,
r1))+((1 - 2 * ((X3)/3)))*(r1))*(r2))-C_12,
((((L1 * (1-r1)) * ((1-r1) * 1 + 0)) * ((((X1X2H12)/3))))+(((L1 * r1) * (1-r1)) * (((L1 * r1) * (1-r1))))
r1) * 1) * ((((X3)/3))+((1 - 2 * ((X3)/3))))+(((L1 * r1) * (r1 * 1 + 0)) * ((X3)/3)))) + (((X3)/3))) * (((X3)/3)))) * (((X3)/3))) * (((X3)/3))) * (((X3)/3)))) * (((X3)/3))) * (((X3)/3)))) * (((X3)/3))) * (((X3)/3)))) * (((X3)/3))) * (((X3)/3)))) * (((X3)/3))) * (((X3)/3)))) * (((X3)/3))) * (((X3)/3)) * (((X3)/3))) * (((X3)/3)) * (((X3)/3)) * (((X3)/3)) * (((X3)/3)) * (((X3)/3))) * (((X3)/3))) * (((X3)/3))) * (((X3)/3))) * (((X3)/3))) * (((X3)/3)) * (((X3)/3))) * (((X3)/3)) * (((X3)/3))) * (((X3)/3)) * (((X3)/3))) * (((X3)/3)) * (((X3)/3)) * (((X3)/3)) * (((X3)/3)) * ((
((((H11)/3))))-C 9,
((((((((X2)/3))*((1-r1))+(1-2*((X3)/3)))*(r1))*((1-r2))+((((X1X2)/3))*((1-r1))
+((1-2*((X3)/3)))*(r1))*(r2))-C_15
((((L1 * (1-r1)) * ((1-r1) * 1 + 0)) * ((((X1X2H12)/3))))+(((L1 * (L1 
r1) * (1-r1) * 1) * (((1 - 2 * ((X3)/3)))+(((X3)/3))))+(((L1 * r1)
* (r1 * 1 + 0)) * ((((H11)/3))))-C_8,
(((1-L1)+(((L1 * (1-r1)) * ((1-r1) * 1 + 0)) * (((1 - 2 * ((X1H12)/
3)))))+(((L1 * r1) * (1-r1) * 1) * ((((X2X3)/3))+(((X2X3)/3))))+(((L1
* r1) * (r1 * 1 + 0)) * (((1 - 2 * ((H11)/3))))))*((1-r2))+((1-L1)+
```

syms X1X2X3 X1X2H12 X1X2 X2X3 H11X3 X1H12 L1 X2 X3 H11 H12 r1 r2 % 13

```
(((L1 * (1-r1)) * ((1-r1) * 1 + 0)) * (((1 - 2 * ((H12)/3)))))+(((L1 * (1-r1)) * ((L1 * (1-r1)) * ((L1 * (1-r1)))))))
* r1) * (1-r1) * 1) * ((((X1X2X3)/3))+(((X1X2X3)/3))))+(((L1 * r1) *
(r1 * 1 + 0)) * (((1 - 2 * ((H11)/3)))))*(r2))-C_4,
((((X2)/3)*((1-r1))+((X3)/3))*(r1))*((1-r2))+(((X1X2)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+(((X3)/3))*((1-r1))+((((X3)/3)))*((1-r1))+((((X3)/3)))*((1-r1))+((((X3)/3)))*((1-r1))+((((X3)/3)))*((1-r1))+((((X3)/3)))*((1-r1))+((((X3)/3)))*((1-r1))+((((X3)/3)))*((1-r1))+((((X3)/3)))*(((X3)/3))+(((X3)/3)))*(((X3)/3))+(((X3)/3))*(((X3)/3))+(((X3)/3)))*(((X3)/3))+(((X3)/3))+(((X3)/3)))*(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+(((X3)/3))+
3))*(r1))*(r2))-C_11]
V = [X1X2X3 \ X1X2H12 \ X1X2 \ X2X3 \ H11X3 \ X1H12 \ L1 \ X2 \ X3 \ H11 \ H12 \ r1 \ r2]
C_1 C_2 C_3 C_4 C_5 C_6 C_7 C_8 C_9 C_10 C_11 C_12 C_13 C_14 C_15]
JF = jacobian(F, V)
 B = [zeros(15,13) - eye(15)]
rank([JF; B]) % nxn that varnish
size([JF; B]) % The size function returns the dimensions of an array
null([JF;B]) % number of overparametrizations
F =
(r2 - 1)*(L1 + L1*r1^2*((2*H11X3)/3 - 1) + L1*((2*X1H12)/3 - 1)*(r1 - 1)^2 +
(2*L1*X2*r1*(r1 - 1))/3 - 1) - r2*(L1 + L1*r1^2*((2*H11X3)/3 - 1) +
L1*((2*H12)/3 - 1)*(r1 - 1)^2 + (2*L1*X1X2*r1*(r1 - 1))/3 - 1) - C_1
                                                                                         r2*((H12*L1*(r1 - 1)^2)/3 +
(H11X3*L1*r1^2)/3 + L1*r1*(X1X2/3 - 1)*(r1 - 1)) - C_2 - (r2 - 1)
1)*((L1*X1H12*(r1 - 1)^2)/3 + (H11X3*L1*r1^2)/3 + L1*r1*(X2/3 - 1)*(r1 - 1))
                                                                                          r2*((H12*L1*(r1 - 1)^2)/3 +
(H11X3*L1*r1^2)/3 + L1*r1*(X1X2/3 - 1)*(r1 - 1)) - C_3 - (r2 - 1)
1)*((L1*X1H12*(r1 - 1)^2)/3 + (H11X3*L1*r1^2)/3 + L1*r1*(X2/3 - 1)*(r1 - 1))
                                                                                          r2*((H12*L1*(r1 - 1)^2)/3 +
(H11*L1*r1^2)/3 + L1*r1*(X1X2X3/3 - 1)*(r1 - 1)) - C_5 - (r2 - 1)
1)*((L1*X1H12*(r1 - 1)^2)/3 + (H11*L1*r1^2)/3 + L1*r1*(X2X3/3 - 1)*(r1 - 1))
                                                                                         r2*((H12*L1*(r1 - 1)^2)/3 +
(H11*L1*r1^2)/3 + L1*r1*(X1X2X3/3 - 1)*(r1 - 1)) - C_6 - (r2 - 1)
1)*((L1*X1H12*(r1 - 1)^2)/3 + (H11*L1*r1^2)/3 + L1*r1*(X2X3/3 - 1)*(r1 - 1))
                                                                        r2*((X3*r1)/3 + ((2*X1X2)/3 - 1)*(r1 -
1)) - ((X3*r1)/3 + ((2*X2)/3 - 1)*(r1 - 1))*(r2 - 1) - C_13
                                                                                                       r2*((X3*r1)/3 -
(X1X2*(r1-1))/3) - ((X3*r1)/3 - (X2*(r1-1))/3)*(r2-1) - C_14
                                                                    1 - L1 - L1*r1^2((2*H11)/3 - 1) -
L1*((2*X1X2H12)/3 - 1)*(r1 - 1)^2 - (2*L1*X3*r1*(r1 - 1))/3 - C_7
                                                                        r2*((X3*r1)/3 + ((2*X1X2)/3 - 1)*(r1 -
1)) - ((X3*r1)/3 + ((2*X2)/3 - 1)*(r1 - 1))*(r2 - 1) - C_10
                                                                        ((X2*(r1 - 1))/3 + r1*((2*X3)/3 -
1))*(r2 - 1) - C_12 - r2*((X1X2*(r1 - 1))/3 + r1*((2*X3)/3 - 1))
                                                                                                                 (L1*X1X2H12*(r1 -
1)^2/3 - C_9 + (H11*L1*r1^2)/3 + L1*r1*(X3/3 - 1)*(r1 - 1)
                                                                           r1*(r2 - 1)*((2*X3)/3 + (X2*(r1 -
1))/3 - 1) - r2*((X1X2*(r1 - 1))/3 + r1*((2*X3)/3 - 1)) - C_15
```

```
(L1*X1X2H12*(r1 -
1)^2/3 - C8 + (H11*L1*r1^2)/3 + L1*r1*(X3/3 - 1)*(r1 - 1)
(r2 - 1)*(L1 + L1*r1^2*((2*H11)/3 - 1) + L1*((2*X1H12)/3 - 1)*(r1 - 1)^2 +
(2*L1*X2X3*r1*(r1 - 1))/3 - 1) - r2*(L1 + L1*r1^2*((2*H11)/3 - 1) +
L1*((2*H12)/3 - 1)*(r1 - 1)^2 + (2*L1*X1X2X3*r1*(r1 - 1))/3 - 1) - C_4
                                                                                                   r2*((X3*r1)/3 -
(X1X2*(r1-1))/3) - ((X3*r1)/3 - (X2*(r1-1))/3)*(r2-1) - C 11
V =
[X1X2X3, X1X2H12, X1X2, X2X3, H11X3, X1H12, L1, X2, X3, H11, H12, r1, r2,
C_{-1}, C_{-2}, C_{-3}, C_{-4}, C_{-5}, C_{-6}, C_{-7}, C_{-8}, C_{-9}, C_{-10}, C_{-11}, C_{-12}, C_{-13}, C_{-14},
C 151
JF =
                                                                                      0, -(2*L1*r1*r2*(r1 -
                                                                 0, (2*L1*r1^2*(r2 - 1))/3 -
1))/3,
(2*L1*r1^2*r2)/3, (2*L1*(r1 - 1)^2*(r2 - 1))/3, (r2 - 1)*(r1^2*((2*H11X3)/3 - 1)^2*(r1^2*r2)/3
1) + ((2*X1H12)/3 - 1)*(r1 - 1)^2 + (2*X2*r1*(r1 - 1))/3 + 1) -
r2*(r1^2*((2*H11X3)/3 - 1) + ((2*H12)/3 - 1)*(r1 - 1)^2 + (2*X1X2*r1*(r1 - 1)^2)
1))/3 + 1), (2*L1*r1*(r1 - 1)*(r2 - 1))/3,
0.
                                                                                 0, -(2*L1*r2*(r1 - 1)^2)/3,
(r2 - 1)*(2*L1*r1*((2*H11X3)/3 - 1) + (2*L1*X2*r1)/3 + (2*L1*X2*(r1 - 1))/3 +
L1*((2*X1H12)/3 - 1)*(2*r1 - 2)) - r2*(2*L1*r1*((2*H11X3)/3 - 1) +
(2*L1*X1X2*r1)/3 + (2*L1*X1X2*(r1 - 1))/3 + L1*((2*H12)/3 - 1)*(2*r1 - 1)
              L1*((2*X1H12)/3 - 1)*(r1 - 1)^2 - L1*((2*H12)/3 - 1)*(r1 - 1)^2 +
(2*L1*X2*r1*(r1-1))/3 - (2*L1*X1X2*r1*(r1-1))/3, -1, 0, 0, 0, 0, 0,
0, 0, 0, 0, 0, 0, 0, 0]
                                                                                                (L1*r1*r2*(r1 -
Γ
1))/3,
                                                                               (L1*r1^2*r2)/3 - (L1*r1^2*(r2 -
                                                                  0,
              -(L1*(r1 - 1)^2*(r2 - 1))/3,
1))/3,
r2*((H11X3*r1^2)/3 + (H12*(r1 - 1)^2)/3 + r1*(X1X2/3 - 1)*(r1 - 1)) - (r2 - 1)*(r1 - 1)) - (r2 - 1)*(r1 - 1)*
1)*((H11X3*r1^2)/3 + (X1H12*(r1 - 1)^2)/3 + r1*(X2/3 - 1)*(r1 - 1)), -
(L1*r1*(r1 - 1)*(r2 - 1))/3,
0,
                                                                                            (L1*r2*(r1 -
                                                                                 0.
                                                                     r2*((H12*L1*(2*r1 - 2))/3 +
1)^{2}/3,
L1*r1*(X1X2/3 - 1) + (2*H11X3*L1*r1)/3 + L1*(X1X2/3 - 1)*(r1 - 1)) - (r2 - 1)
1)*(L1*r1*(X2/3 - 1) + (L1*X1H12*(2*r1 - 2))/3 + (2*H11X3*L1*r1)/3 + L1*(X2/3)
                                                           (H12*L1*(r1 - 1)^2)/3 - (L1*X1H12*(r1 -
-1)*(r1 - 1)),
1)^2/3 - L1*r1*(X2/3 - 1)*(r1 - 1) + L1*r1*(X1X2/3 - 1)*(r1 - 1), 0, -1,
0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
Γ
                                             0,
                                                                                      0,
                                                                                                 (L1*r1*r2*(r1 -
1))/3,
                                                                              (L1*r1^2*r2)/3 - (L1*r1^2*(r2 - 
                                                                  Ο,
1))/3,
              -(L1*(r1 - 1)^2*(r2 - 1))/3,
r2*((H11X3*r1^2)/3 + (H12*(r1 - 1)^2)/3 + r1*(X1X2/3 - 1)*(r1 - 1)) - (r2 - 1)*(r1 - 1))
1)*((H11X3*r1^2)/3 + (X1H12*(r1 - 1)^2)/3 + r1*(X2/3 - 1)*(r1 - 1)), -
(L1*r1*(r1 - 1)*(r2 - 1))/3,
0,
                                                                                 0,
                                                                                          (L1*r2*(r1 -
1)^{2}/3,
                                                                     r2*((H12*L1*(2*r1 - 2))/3 +
L1*r1*(X1X2/3 - 1) + (2*H11X3*L1*r1)/3 + L1*(X1X2/3 - 1)*(r1 - 1)) - (r2 - 1)
```

```
1)*(L1*r1*(X2/3 - 1) + (L1*X1H12*(2*r1 - 2))/3 + (2*H11X3*L1*r1)/3 + L1*(X2/3))
                                                                                               (H12*L1*(r1 - 1)^2)/3 - (L1*X1H12*(r1 -
-1)*(r1 - 1)),
1)^{2}/3 - L1*r1*(X2/3 - 1)*(r1 - 1) + L1*r1*(X1X2/3 - 1)*(r1 - 1), 0, 0,
-1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
           (L1*r1*r2*(r1 - 1))/3,
                                                                                                                                         0,
(L1*r1*(r1 - 1)*(r2 - 1))/3,
                                                                                                                                                                                                             0, -
(L1*(r1 - 1)^2*(r2 - 1))/3,
r2*((H11*r1^2)/3 + (H12*(r1 - 1)^2)/3 + r1*(X1X2X3/3 - 1)*(r1 - 1)) - (r2 - 1)*(r1 - 1)) - (r2 - 1)*(r1 - 1)*
1)*((H11*r1^2)/3 + (X1H12*(r1 - 1)^2)/3 + r1*(X2X3/3 - 1)*(r1 -
1)),
                                                                                                  0,
(L1*r1^2*r2)/3 - (L1*r1^2*(r2 - 1))/3,
                                                                                                                           (L1*r2*(r1 -
1)^2)/3,
                                                                                                 r2*((H12*L1*(2*r1 - 2))/3 + L1*r1*(X1X2X3/3)
 -1) + (2*H11*L1*r1)/3 + L1*(X1X2X3/3 - 1)*(r1 - 1)) - (r2 - 1)
1)*((L1*X1H12*(2*r1 - 2))/3 + L1*r1*(X2X3/3 - 1) + (2*H11*L1*r1)/3 +
L1*(X2X3/3 - 1)*(r1 - 1)),
                                                                                                                 (H12*L1*(r1 - 1)^2)/3 - (L1*X1H12*(r1))
-1)^2/3 - L1*r1*(X2X3/3 - 1)*(r1 - 1) + L1*r1*(X1X2X3/3 - 1)*(r1 - 1), 0,
0, 0, 0, -1, 0, 0, 0, 0, 0, 0, 0, 0, 0]
          (L1*r1*r2*(r1 - 1))/3,
                                                                                                                                                                                                                      0, -
(L1*r1*(r1 - 1)*(r2 - 1))/3,
                                                                                                                                                                                                             0, -
(L1*(r1 - 1)^2*(r2 - 1))/3,
r2*((H11*r1^2)/3 + (H12*(r1 - 1)^2)/3 + r1*(X1X2X3/3 - 1)*(r1 - 1)) - (r2 - 1)*(r1 - 1)) - (r2 - 1)*(r1 - 1)*
1)*((H11*r1^2)/3 + (X1H12*(r1 - 1)^2)/3 + r1*(X2X3/3 - 1)*(r1 -
1)),
                                                                                                                                                                                                    0,
                                                                                                  Ο,
(L1*r1^2*r2)/3 - (L1*r1^2*(r2 - 1))/3,
                                                                                                                         (L1*r2*(r1 -
1)^2)/3,
                                                                                                  r2*((H12*L1*(2*r1 - 2))/3 + L1*r1*(X1X2X3/3)
-1) + (2*H11*L1*r1)/3 + L1*(X1X2X3/3 - 1)*(r1 - 1)) - (r2 -
1)*((L1*X1H12*(2*r1 - 2))/3 + L1*r1*(X2X3/3 - 1) + (2*H11*L1*r1)/3 +
L1*(X2X3/3 - 1)*(r1 - 1)),
                                                                                                                (H12*L1*(r1 - 1)^2)/3 - (L1*X1H12*(r1))
-1)^2/3 - L1*r1*(X2X3/3 - 1)*(r1 - 1) + L1*r1*(X1X2X3/3 - 1)*(r1 - 1), 0,
0, 0, 0, 0, -1, 0, 0, 0, 0, 0, 0, 0, 0]
[
                                                                       0,
                                                                                                                                         0,
                                                                                                                                                            r2*((2*r1)/3 -
                                                                                                     0,
2/3),
0,
0,
                                                                          0, -((2*r1)/3 - 2/3)*(r2 - 1), (r1*r2)/3 -
(r1*(r2 - 1))/3,
0,
0,
                                r2*(X3/3 + (2*X1X2)/3 - 1) - (r2 - 1)*((2*X2)/3 + X3/3 -
((2*X1X2)/3 - 1)*(r1 - 1) - ((2*X2)/3 - 1)*(r1 - 1), 0, 0, 0, 0, 0, 0,
0, 0, 0, 0, 0, -1, 0, 0]
                                                                                                                                         0,
                                                                                                                                                                    -r2*(r1/3 -
[
                                                                       0,
1/3),
                                                                                                     0,
Ο,
0,
                                                                                                       (r1/3 - 1/3)*(r2 - 1), (r1*r2)/3 -
                                                                          0,
(r1*(r2 - 1))/3,
0,
0,
```

```
r2*(X3/3 - X1X2/3) + (X2/3 - X3/3)*(r2 -
1),
           (X2*(r1-1))/3 - (X1X2*(r1-1))/3, 0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0, 0, 0, 0, -1, 0
                       0, -(2*L1*(r1 - 1)^2)/3,
0,
                             0,
0,
0,
                     -r1^2*((2*H11)/3 - 1) - ((2*X1X2H12)/3 - 1)*(r1 - 1)^2
-(2*X3*r1*(r1 - 1))/3 - 1,
                                                     0,
-(2*L1*r1*(r1 - 1))/3,
-(2*L1*r1^2)/3,
0,
                                            - 2*L1*r1*((2*H11)/3 - 1) -
(2*L1*X3*r1)/3 - (2*L1*X3*(r1 - 1))/3 - L1*((2*X1X2H12)/3 - 1)*(2*r1 - 1)
2),
                                            0, 0, 0, 0, 0, 0, -1,
0, 0, 0, 0, 0, 0, 0]
                       0,
                                            0, r2*((2*r1)/3 -
2/3),
                                0,
0,
0,
                       0,
                             -((2*r1)/3 - 2/3)*(r2 - 1), (r1*r2)/3 -
(r1*(r2 - 1))/3,
0,
0,
          r2*(X3/3 + (2*X1X2)/3 - 1) - (r2 - 1)*((2*X2)/3 + X3/3 -
1),
((2*X1X2)/3 - 1)*(r1 - 1) - ((2*X2)/3 - 1)*(r1 - 1), 0, 0, 0, 0, 0, 0,
0, 0, 0, -1, 0, 0, 0, 0]
                                            0,
                                                     -r2*(r1/3 -
Γ
1/3),
                                0,
0,
0,
                                 (r1/3 - 1/3)*(r2 - 1), (2*r1*(r2 - 1))/3
                        0,
-(2*r1*r2)/3,
0,
0,
          (r2 - 1)*(X2/3 + (2*X3)/3 - 1) - r2*((2*X3)/3 + X1X2/3 -
1),
           (X2*(r1-1))/3 - (X1X2*(r1-1))/3, 0, 0, 0, 0, 0, 0, 0, 0,
0, 0, 0, 0, -1, 0, 0, 0
                       0,
                            (L1*(r1 - 1)^2)/3,
[
0,
                             0,
0,
0,
                                        (H11*r1^2)/3 + (X1X2H12*(r1 -
1)^2/3 + r1*(X3/3 - 1)*(r1 - 1),
                                                           0,
(L1*r1*(r1 - 1))/3,
(L1*r1^2)/3,
```

```
0,
                                                         L1*r1*(X3/3 - 1)
+ (L1*X1X2H12*(2*r1 - 2))/3 + (2*H11*L1*r1)/3 + L1*(X3/3 - 1)*(r1 -
1),
                                           0, 0, 0, 0, 0, 0, 0, 0,
0, -1, 0, 0, 0, 0, 0]
                      0,
                                                    -r2*(r1/3 -
Γ
                                           0,
1/3),
                               0,
0,
0,
                       0,
                              r1*(r1/3 - 1/3)*(r2 - 1), (2*r1*(r2 - 1))/3
-(2*r1*r2)/3,
Ο,
0,
                                                     (r2 - 1)*((2*X3)/3 +
(X2*(r1 - 1))/3 - 1) - r2*((2*X3)/3 + X1X2/3 - 1) + (X2*r1*(r2 - 1))/3 - 1)
                                                 r1*((2*X3)/3 + (X2*(r1 -
1))/3,
0, 0, 0, 0, 0, 0, 0, -1]
[
                      0,
                            (L1*(r1 - 1)^2)/3,
0,
                             0,
0,
0,
                                       (H11*r1^2)/3 + (X1X2H12*(r1 -
1)^2/3 + r1*(X3/3 - 1)*(r1 - 1),
                                                          0,
(L1*r1*(r1 - 1))/3,
(L1*r1^2)/3,
0,
                                                         L1*r1*(X3/3 - 1)
+ (L1*X1X2H12*(2*r1 - 2))/3 + (2*H11*L1*r1)/3 + L1*(X3/3 - 1)*(r1 - 2)
1),
                                           0, 0, 0, 0, 0, 0, 0,
-1, 0, 0, 0, 0, 0, 0]
[-(2*L1*r1*r2*(r1 - 1))/3,
                                                                   0,
                                           0,
(2*L1*r1*(r1 - 1)*(r2 - 1))/3,
                                                                  0,
(2*L1*(r1 - 1)^2*(r2 - 1))/3, (r2 - 1)*(r1^2*((2*H11)/3 - 1) + ((2*X1H12)/3 - 1))
1)*(r1 - 1)^2 + (2*X2X3*r1*(r1 - 1))/3 + 1) - r2*(r1^2*((2*H11)/3 - 1) +
((2*H12)/3 - 1)*(r1 - 1)^2 + (2*X1X2X3*r1*(r1 - 1))/3 +
                              0,
(2*L1*r1^2*(r2-1))/3 - (2*L1*r1^2*r2)/3, -(2*L1*r2*(r1-1)^2)/3, (r2-1)^2
1)*(2*L1*r1*((2*H11)/3 - 1) + (2*L1*X2X3*r1)/3 + (2*L1*X2X3*(r1 - 1))/3 +
L1*((2*X1H12)/3 - 1)*(2*r1 - 2)) - r2*(2*L1*r1*((2*H11)/3 - 1) +
(2*L1*X1X2X3*r1)/3 + (2*L1*X1X2X3*(r1 - 1))/3 + L1*((2*H12)/3 - 1)*(2*r1 - 1)
2)), L1*((2*X1H12)/3 - 1)*(r1 - 1)^2 - L1*((2*H12)/3 - 1)*(r1 - 1)^2 +
(2*L1*X2X3*r1*(r1-1))/3 - (2*L1*X1X2X3*r1*(r1-1))/3, 0, 0, -1, 0,
0, 0, 0, 0, 0, 0, 0, 0, 0]
Γ
                      0,
                                           0,
                                                     -r2*(r1/3 -
1/3),
                                0,
0,
0,
                       0,
                                (r1/3 - 1/3)*(r2 - 1), (r1*r2)/3 -
(r1*(r2 - 1))/3,
```

```
0,
0,
                                 r2*(X3/3 - X1X2/3) + (X2/3 - X3/3)*(r2 -
1),
              (X2*(r1-1))/3 - (X1X2*(r1-1))/3, 0, 0, 0, 0, 0, 0, 0,
0,
    0, 0, -1, 0, 0, 0, 0
B =
  Columns 1 through 13
      0
             0
                     0
                            0
                                    0
                                           0
                                                   0
                                                          0
                                                                  0
                                                                         0
                                                                                 0
                                                                                        0
                                                                                                0
      0
             0
                     0
                            0
                                                   0
                                                          0
      0
              0
                     0
                            0
                                                   0
                                                          0
                                                                  0
                                                                                                0
                                    0
                                                                                        0
             0
                     0
                            0
                                    0
                                                   0
                                                          0
                                                                  0
                                                                          0
                                                                                                0
             0
                            0
                                           0
                                                                  0
                                                                                 0
                     0
                                    0
                                                          0
                                                                          0
                                                                                                0
      0
             0
                     0
                            0
                                           0
                                                   0
                                                          0
                                                                  0
                                                                                 0
                                                                                                0
                                    0
                                                                          0
                                                                                        0
             0
                     0
                            0
                                           0
                                                   0
                                                          0
                                                                  0
                                                                                 0
                                                                                        0
                                                                                                0
                                    0
                                                                          0
      0
             0
                     0
                            0
                                    0
                                           0
                                                   0
                                                          0
                                                                  0
                                                                          0
                                                                                 0
                                                                                        0
                                                                                                0
             0
                     0
                            0
                                    0
                                                          0
                                                                  0
                                                                          0
                                                                                                0
      0
             0
                     0
                            0
                                           0
                                                   0
                                                          0
                                                                  0
                                                                          0
                                                                                 0
                                                                                        0
                                                                                                0
                                    0
             0
                     0
                            0
                                           0
                                                   0
                                                          0
                                                                  0
                                                                                 0
                                                                                                0
      0
             0
                     0
                            0
                                           0
                                                   0
                                                          0
                                                                  0
                                                                                 0
                                                                                        0
                                                                                                0
                                    0
                                                                          0
             0
                     0
                            0
                                           0
                                                   0
                                                          0
                                                                  0
                                                                          0
                                                                                 0
                                                                                                0
      0
             0
                     0
                            0
                                    0
                                           0
                                                   0
                                                          0
                                                                  0
                                                                          0
                                                                                 0
                                                                                        0
                                                                                                0
             0
                     0
                            0
                                    0
                                                                          0
                                                                                                0
  Columns 14 through 26
     -1
             0
                     0
                            0
                                    0
                                           0
                                                   0
                                                          0
                                                                  0
                                                                         0
                                                                                 0
                                                                                        0
                                                                                                0
      0
            -1
                     0
                                           0
                            0
                                    0
                                                          0
                                                                  0
                                                                          0
                                                                                 0
                                                                                                0
      0
             0
                            0
                                    0
                                           0
                                                   0
                                                          0
                                                                  0
                                                                          0
                                                                                 0
                                                                                        0
                                                                                                0
                    -1
             0
                     0
                           -1
                                    0
                                           0
                                                   0
                                                          0
                                                                  0
                                                                                 0
                                                                                                0
                            0
                                           0
                                                   0
                                                                  0
                                                                                                0
      0
             0
                     0
                                   -1
                                                          0
                                                                          0
                                                                                 0
                                                                                        0
             0
                     0
                            0
                                    0
                                          -1
                                                   0
                                                          0
                                                                          0
                                                                                                0
             0
                     0
                            0
                                           0
                                                  -1
                                                                  0
                                                                                 0
                                                                                                0
                                    0
                                                          0
                                                                          0
                                                                                        0
             0
                     0
                            0
                                    0
                                           0
                                                   0
                                                         -1
                                                                  0
                                                                          0
                                                                                 0
                                                                                                0
             0
                                                          0
                     0
                            0
                                    0
                                           0
                                                   0
                                                                 -1
                                                                          0
                                                                                 0
                                                                                                0
      0
             0
                     0
                            0
                                           0
                                                          0
                                                                  0
                                                                                 0
                                                                                                0
                                    0
                                                   0
                                                                        -1
                                                                                        0
      0
             0
                     0
                            0
                                           0
                                                   0
                                                          0
                                                                  0
                                                                                                0
                                    0
                                                                          0
                                                                                -1
                                                                                        0
                                                                                 0
                                                                                                0
      0
             0
                     0
                            0
                                    0
                                           0
                                                   0
                                                          0
                                                                  0
                                                                         0
                                                                                       -1
                                                          0
                                                                  0
                     0
                            0
                                                   0
                                                                         0
                                                                                        0
                                                                                               -1
      0
             0
                     0
                            0
                                    0
                                           0
                                                   0
                                                          0
                                                                  0
                                                                         0
                                                                                 0
                                                                                        0
                                                                                                0
             0
      0
                                    0
                                           0
                                                   0
                                                                  0
                                                                          0
                                                                                 0
                                                                                                0
  Columns 27 through 28
      0
             0
      0
             0
      0
             0
      0
             0
```

```
0
                                  0
               0
               0
                                  0
               0
               0
                                  0
               0
                                 0
               0
                                 0
               0
                                 0
             -1
                                 0
               0
                               -1
ans =
            21
ans =
            30
                              28
ans =
[(r2-1)/r2, ((r1-1)*(r2-1))/(r1*r2), -(X1H12+3*r1+H12*r2-1)]
2*X1H12*r1 - X1H12*r2 - X2X3*r1 + H11*r1^2 + X1H12*r1^2 + X2X3*r1^2 - 3*r1^2
- 2*H12*r1*r2 + 2*X1H12*r1*r2 + X2X3*r1*r2 - X1X2X3*r1*r2 + H12*r1^2*r2 -
X1H12*r1^2*r2 - X2X3*r1^2*r2 + X1X2X3*r1^2*r2)/(L1*r1*r2*(r1 - 1)), -r1/
(r2*(r1 - 1)),
                                                                         -(r1 - 1)/r1, -(2*H11*r1 - X2X3 - 6*r1 - 2*X1H12 -
2*H12*r2 + 2*X1H12*r1 + 2*X1H12*r2 + 2*X2X3*r1 + X2X3*r2 - X1X2X3*r2 +
1)), (H12 - X1H12 - H12*r1 + X1H12*r1 + X2X3*r1 - X1X2X3*r1)/(r1*r2)]
[
                              0,
0,
                                                                                                                                                                                                                 -(X1X2H12
+ 3*r1 - X3*r1 - 2*X1X2H12*r1 + H11*r1^2 + X3*r1^2 + X1X2H12*r1^2 - 3*r1^2)/
(L1*(r1 - 1)^2), -r1^2/(r1 - 1)^2,
0,
                                                                                                                                              -(2*H11*r1 - 5*r1 - 2*X1X2H12 +
X3*r1 + 2*X1X2H12*r1 + 2)/(r1 -
                                                                                                                                                                                                                                 01
1)^2,
                                  0,
[
0,
                                  0,
                                                                                            0,
0,
                                                                                                                                                                                                                                       (X2)
- X2*r2 - X1X2*r2 + 1)/(r2*(r1 -
                                                                                                                                                                                                       -X1X2/r2
1)),
[
                                  1,
0,
```

8

```
0,
                            0,
0,
                                                                      0]
0,
          0, ((r1 - 1)^2*(r2 - 1))/r1^2,
                                                               -(X1H12 + 3*r1
[
+ H12*r2 - X2*r1 - 2*X1H12*r1 - X1H12*r2 + H11X3*r1^2 + X2*r1^2 + X1H12*r1^2
- 3*r1^2 - 2*H12*r1*r2 + X2*r1*r2 + 2*X1H12*r1*r2 - X1X2*r1*r2 + H12*r1^2*r2
- X2*r1^2*r2 - X1H12*r1^2*r2 + X1X2*r1^2*r2)/(L1*r1^2),
                                                  -(2*H11X3*r1 - 2*X1H12 -
(r2*(r1 - 1)^2)/r1^2,
5*r1 - 2*H12*r2 - X2 + X2*r1 + X2*r2 + 2*X1H12*r1 + 2*X1H12*r2 - X1X2*r2 +
2*H12*r1*r2 - X2*r1*r2 - 2*X1H12*r1*r2 + X1X2*r1*r2 + 3)/r1^2, -(H12 - X1H12
- 2*H12*r1 + 2*X1H12*r1 + H12*r1^2 - X1H12*r1^2)/r1^2]
[
          0,
1,
           0,
                             0,
0,
0,
                                                                      0]
[
           0,
0,
           1,
                              0,
0,
                                                                      0]
0,
[
           0,
0,
           0,
                              0,
0,
                    -(2*X2)/(r1 -
                                                           -X2/(r2 - 1)
1),
           0,
[
0,
           0,
                             0,
0,
                        -(X3 -
1)/r1,
                                                                          0]
[
           0,
0,
           0,
                              1,
```

g

0,			
0, [0,	0,		0]
1,	0,	0,	
0, [0,	0,		0]
0,	0,	0,	
1, [0,	0,		0]
0,	0,	0,	
0, [0,	0,		1]
0,	0,	0,	
0, [0,	0,		0]
0,	0,	0,	
0, [0,	0,		0]
	0,	0,	

0,			
0, [0,	0,		0]
0,	0,	0,	
0, [0,	0,		0]
0,	0,	0,	
0, [0,	0,		0]
0,	0,	0,	
0, [0,	0,		0]
0,	0,	0,	
0, [0,	0,		0]
0,	0,	0,	
0, [0,	0,		0]
	0,	0,	

0,			
0, [0,	0,		0]
0,	0,	0,	
0, [0,	0,		0]
0,	0,	0,	
0, [0,	0,		0]
0,	0,	0,	
0, [0,	0,		0]
0,	0,	0,	
0, [0,	0,		0]
0,	0,	0,	
0, [0,	0,		0]
	0,	0,	

0,

0,

Results

rank = 21 size = 30 28

Dim = 13 - (28-21) = 6

Published with MATLAB® R2024a