

1)

Não é possível estimar todas as variáveis de estado.  
Adicionando a medida P12, o sistema permanece não-observável.  
Adicionando a medida P34, o sistema se torna observável.  
Adicionando a medida P3, o sistema se torna observável.

2)

Medidas críticas: P2

Conjuntos críticos de medidas: {P25, P4}

3)

a.

Normalized Residue:

25.79271 ← P12

9.84963  
7.09682  
7.07242  
10.64899  
2.96690  
2.99498  
1.97369  
3.01700  
1.45055  
3.00892  
3.37753

UI:

0.62696  
0.61148  
0.48151  
0.47914  
3.89817  
5.49665  
5.98219  
0.62917  
1.10380  
0.57547  
0.22196  
0.25972

b.

Normalized Residue:

7.35329

7.25985

27.05780 ← P23

6.15685

12.15447

1.66610

1.45427

2.19219

3.49253

1.65019

2.20203

2.43191

UI:

0.62658

0.61112

0.48127

0.47887

3.88779

5.43886

5.91561

0.63101

1.10262

0.57639

0.22298

0.26123

c.

Normalized Residue:

3.33328

3.16234

3.32848

2.99024

7.32276 ← P2

2.18532

3.14741

3.48953

6.33199

2.86859

1.12015

1.50114

UI:

0.62492

0.60957

0.48022

0.47768

3.83725

5.18264  
5.62353  
0.63991  
1.09768  
0.58084  
0.22720  
0.26768

4)

a.

Normalized Residue:

27.45634 ← P12

4.87491  
2.75698  
2.67736  
0.08066  
0.04460  
4.19124  
0.64772  
2.71952  
8.76957  
7.66459  
10.14282  
11.03318  
2.27644  
1.07339  
0.96125

UI:

0.41752  
0.41167  
0.34953  
0.34485  
0.60896  
0.61509  
0.36743  
0.66721  
0.30283  
1.45188  
2.09981  
2.50107  
1.95729  
0.49225  
0.21537  
0.22349

b.

Normalized Residue:

0.17793

0.02424

3.99038

3.97846

24.70984 ← P23

10.15187

1.16832

6.61282

0.50186

0.83938

9.68066

6.06078

11.46973

7.68862

2.78369

2.78397

UI:

0.41517

0.40989

0.34991

0.34523

0.61378

0.61979

0.36579

0.65019

0.29922

1.44220

2.12846

2.58556

2.00395

0.48218

0.21481

0.22286

c.

Normalized Residue:

4.26051

4.21135

2.98557

2.91496

1.44793

1.49188

28.17304 ← P1

0.44857

2.40477

7.72060

5.16091

7.97258  
7.81643  
0.80162  
1.34547  
1.24965

UI:

0.41715  
0.41138  
0.34962  
0.34495  
0.60974  
0.61585  
0.36719  
0.66474  
0.30229  
1.45048  
2.10390  
2.51351  
1.96415  
0.49047  
0.21529  
0.22340