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1 // Ray W. Clough & Joseph Penzien "Dynamics of Structures"
2 // Page 第202頁至第203頁
3
4 using Matrix_0;
5
6 // 初始值InitVal(速度, 變位)。
7 double[,] InitVal = { { 0 }, { 9 }, { 0 }, { 0.5 }, { 0.4 },
    { 0.3 } };
8
9 // 建構系統矩陣A。
10 double[,] M = { { 1, 0, 0 }, { 0, 1.5, 0 }, { 0, 0, 2 } };
11 double[,] K = { { 600, -600, 0 }, { -600, 1800, -1200 }, { 0,
    -1200, 3000 } };
12 ReMatrix C = (new Zero(3)).GetMatrix;
13 MKCMatrix mkc = new MKCMatrix(M, K, C);
14 ReMatrix A = mkc.Matrix;
15
16 // 系統特徵值V和模態(特徵向量)矩陣Q。
17 EIG eig = new EIG(A);
18 CxMatrix D = eig.CxMatrixD;
19 CxMatrix V = eig.CxVector;
20 CxMatrix Q = eig.CxMatrixQ;
21
22 // 系統係數向量d
23 CxHexp Hexp = new CxHexp(D, Q, 0);
24 CxMatrix MatTemp = Hexp.GetCxMatrix;
25 CxMatrix d = ^MatTemp * InitVal;
26
27 // 列印系統與狀態參數V, Q, d。
28 Console.Write(
29     "\n***{0,5}系{0,5}統{0,5}與{0,5}狀{0,5}態{0,5}參{0,5}數{0,5}
        ****\n", "");
30
31 Console.Write("\n***{0,5}系統特徵值V{0,5}***\n{1}\n", "", new PR
    (V));
32 Console.Write("\n***{0,5}模態矩陣Q{0,5}***\n{1}\n", "", new PR(Q));
33 Console.Write("\n***{0,5}係數向量d{0,5}***\n{1}\n", "", new PR(d));
34
35 // 狀態響應。速度, 變位, 加速度。(t = 40秒)
36 double step = 0.5;
37 int iRow = (int)(40 / step + 1);
38 int iCol = M.GetLength(1) + 1;
39 ReMatrix Disp = new ReMatrix(iRow, iCol);
40 ReMatrix Vel = new ReMatrix(iRow, iCol);
41 ReMatrix Acc = new ReMatrix(iRow, iCol);
42 for (int i = 0; i != iRow; i++)
43 {
```

```
44     double t = step * i;
45
46     Hexp = new CxHexp(D, Q, t);
47     MatTemp = Hexp.GetCxMatrix;
48     CxMatrix yh_Cx = MatTemp * d;
49     ReMatrix yh_Re = (ReMatrix)yh_Cx;
50     ReMatrix yhDot_Re = A * yh_Re;
51
52     // 加速度Acc。
53     Acc.Matrix[i, 0] = t;
54     Acc.Matrix[i, 1] = yhDot_Re.Matrix[0, 0];
55     Acc.Matrix[i, 2] = yhDot_Re.Matrix[1, 0];
56     Acc.Matrix[i, 3] = yhDot_Re.Matrix[2, 0];
57
58     // 速度Vel。
59     Vel.Matrix[i, 0] = t;
60     Vel.Matrix[i, 1] = yh_Re.Matrix[0, 0];
61     Vel.Matrix[i, 2] = yh_Re.Matrix[1, 0];
62     Vel.Matrix[i, 3] = yh_Re.Matrix[2, 0];
63
64     // 位移Disp。
65     Disp.Matrix[i, 0] = t;
66     Disp.Matrix[i, 1] = yh_Re.Matrix[3, 0];
67     Disp.Matrix[i, 2] = yh_Re.Matrix[4, 0];
68     Disp.Matrix[i, 3] = yh_Re.Matrix[5, 0];
69
70 }
71
72 // 列印標題。
73 Console.WriteLine("\n****{0, 10} 狀 {0, 5} 態 {0, 5} 響 {0, 5} 應 {0, 10} ****\n",
74     "");
75 // 列印狀態響應(節點的變位, 速度, 和加速)。
76 Console.WriteLine("\n{0, 5} ***位 移 反 應 量 ***{0, 5} \n{0, 8} 時 間 (秒) " +
77     "{0, 8} 第0點位 移 {0, 8} 第1點位 移 {0, 8} 第2點位 移\n\n{1}",
78     "", new PR(Disp));
79 Console.WriteLine("\n{0, 5} ***速 度 反 應 量 ***{0, 5} \n{0, 8} 時 間 (秒) " +
80     "{0, 8} 第0點速 度 {0, 8} 第1點速 度 {0, 8} 第2點速 度\n\n{1}",
81     "", new PR(Vel));
82 Console.WriteLine("\n****{0, 5} 加 速 度 反 應 量 {0, 5} ***\n{0, 8} 時 間 (秒) " +
83     "{0, 7} 第0點加 速 度 {0, 7} 第1點加 速 度 {0, 7} 第2點加 速 度\n\n{1}",
84     "", new PR(Acc));
85
86 // 分別列印時間、節點變位、速度、和加速度等序列。
87 Console.WriteLine("\n時間序列 :\n{0}\n", new PR4(Disp, 0));
88
89 Console.WriteLine("\n第0點變位序列 :\n{0}\n", new PR4(Disp, 1));
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90 Console.Write("\n第1點變位序列 :\n{0}\n", new PR4(Disp, 2));
91 Console.Write("\n第2點變位序列 :\n{0}\n", new PR4(Disp, 3));
92 Console.Write("\n第0點速度序列 :\n{0}\n", new PR4(Vel, 1));
93 Console.Write("\n第1點速度序列 :\n{0}\n", new PR4(Vel, 2));
94 Console.Write("\n第2點速度序列 :\n{0}\n", new PR4(Vel, 3));
95 Console.Write("\n第0點加速度序列 :\n{0}\n", new PR4(Acc, 1));
96 Console.Write("\n第1點加速度序列 :\n{0}\n", new PR4(Acc, 2));
97 Console.Write("\n第2點加速度序列 :\n{0}\n", new PR4(Acc, 3));
98
99 /*輸出結果如下：
100 ****      系      統      與      狀      態      參      數      ****
101
102 ***      系統特徵值V      ***
103      0.00000  +      46.09947i
104      0.00000  -      46.09947i
105      0.00000  +      31.04770i
106      0.00000  -      31.04770i
107      0.00000  +      14.52167i
108      0.00000  -      14.52167i
109
110 ***      系統特徵向量Q      ***
111      0.27298 + 0.00000i,      0.27298 + 0.00000i,      0.73905 + 0.00000i,
112      0.73905 + 0.00000i,      0.81141 + 0.00000i,      0.81141 + 0.00000i
113
114      -0.69390 + 0.00000i,      -0.69390 + 0.00000i,      -0.44830 + 0.00000i,
115      -0.44830 + 0.00000i,      0.52623 + 0.00000i,      0.52623 + 0.00000i
116
117      0.66597 + 0.00000i,      0.66597 + 0.00000i,      -0.50180 + 0.00000i,
118      -0.50180 + 0.00000i,      0.24492 + 0.00000i,      0.24492 + 0.00000i
119
120      0.00000 - 0.00592i,      0.00000 + 0.00592i,      0.00000 - 0.02380i,
121      0.00000 + 0.02380i,      0.00000 - 0.05588i,      0.00000 + 0.05588i
122
123      0.00000 + 0.01505i,      0.00000 - 0.01505i,      0.00000 + 0.01444i,
124      0.00000 - 0.01444i,      0.00000 - 0.03624i,      0.00000 + 0.03624i
125
126      0.00000 - 0.01445i,      0.00000 + 0.01445i,      0.00000 + 0.01616i,
127      0.00000 - 0.01616i,      0.00000 - 0.01687i,      0.00000 + 0.01687i
128
129 ***      係數向量d      ***
130      -2.78170  +      1.63905i
131      -2.78170  -      1.63905i
132      -2.23945  -      2.30387i
133      -2.23945  +      2.30387i
134      2.97558   +      5.28200i
135      2.97558   -      5.28200i
136

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137 ****          狀      態      響      應          ****
138          ***位移反應量***
139          時間(秒)          第0點位移          第1點位移          第2點位移
140          0.00000          0.50000          0.40000          0.30000
141          0.50000          0.71318          0.29042          0.16971
142          1.00000          -0.01535          0.19230          -0.02364
143          1.50000          -0.45288          -0.39900          -0.13435
144          2.00000          -0.64474          -0.47086          -0.14171
145          2.50000          -0.28078          -0.03707          -0.14830
146          3.00000          0.46792          0.19118          0.13277
147          3.50000          0.62626          0.42805          0.30532
148          4.00000          0.40897          0.26710          -0.05157
149          4.50000          -0.38328          -0.15425          0.03183
150          5.00000          -0.51417          -0.57092          -0.23664
151          5.50000          -0.64593          -0.11707          -0.13498
152          6.00000          0.31567          -0.03181          -0.02128
153          6.50000          0.50226          0.44260          0.35189
154          7.00000          0.66808          0.36601          -0.02597
155          7.50000          -0.13772          0.04499          0.12603
156          8.00000          -0.41434          -0.50809          -0.19846
157          8.50000          -0.77276          -0.24203          -0.20482
158          9.00000          -0.02862          -0.17046          -0.07039
159          9.50000          0.43813          0.28498          0.25114
160          10.00000          0.66708          0.50256          0.08316
161          10.50000          0.26517          0.15105          0.11488
162          11.00000          -0.35858          -0.29612          -0.03524
163          11.50000          -0.67015          -0.37204          -0.32482
164          12.00000          -0.44939          -0.23447          -0.04575
165          12.50000          0.36402          0.03065          0.07631
166          13.00000          0.50896          0.59078          0.18753
167          13.50000          0.63502          0.22004          0.08130
168          14.00000          -0.22135          -0.05398          0.13428
169          14.50000          -0.49983          -0.39754          -0.37623
170          15.00000          -0.72605          -0.30203          -0.05364
171          15.50000          0.14465          -0.18758          -0.04114
172          16.00000          0.36380          0.52861          0.17253
173          16.50000          0.77542          0.32159          0.12000
174          17.00000          0.09183          0.10459          0.20183
175          17.50000          -0.38986          -0.25446          -0.28274
176          18.00000          -0.73472          -0.40708          -0.14590
177          18.50000          -0.23415          -0.30140          -0.04495
178          19.00000          0.28227          0.31084          0.02365
179          19.50000          0.66356          0.43831          0.22214
180          20.00000          0.49849          0.16925          0.17619
181          20.50000          -0.30366          -0.00127          -0.09758
182          21.00000          -0.55408          -0.48213          -0.25362
183          21.50000          -0.60562          -0.35351          -0.00270

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184	22.00000	0.15876	0.04706	-0.15182
185	22.50000	0.45226	0.46997	0.27810
186	23.00000	0.78533	0.21546	0.16001
187	23.50000	-0.10719	0.22795	0.04699
188	24.00000	-0.36405	-0.42311	-0.25855
189	24.50000	-0.76245	-0.42252	-0.01835
190	25.00000	-0.11865	-0.13708	-0.23278
191	25.50000	0.29610	0.34019	0.19659
192	26.00000	0.80312	0.29549	0.22468
193	26.50000	0.24433	0.34582	0.07350
194	27.00000	-0.25142	-0.20646	-0.12441
195	27.50000	-0.65016	-0.51376	-0.10724
196	28.00000	-0.50216	-0.21052	-0.20479
197	28.50000	0.19418	0.08890	0.00906
198	29.00000	0.60269	0.36253	0.32319
199	29.50000	0.61256	0.37901	0.03108
200	30.00000	-0.13576	0.07098	0.05668
201	30.50000	-0.40656	-0.54002	-0.17303
202	31.00000	-0.79244	-0.24212	-0.16254
203	31.50000	0.02024	-0.15274	-0.15608
204	32.00000	0.36711	0.31453	0.33823
205	32.50000	0.78591	0.41134	0.02859
206	33.00000	0.10644	0.27548	0.15495
207	33.50000	-0.20736	-0.41590	-0.11298
208	34.00000	-0.81957	-0.29981	-0.19399
209	34.50000	-0.29780	-0.28058	-0.20261
210	35.00000	0.21674	0.11094	0.21345
211	35.50000	0.67955	0.47012	0.10470
212	36.00000	0.46223	0.35539	0.13277
213	36.50000	-0.08838	-0.16199	0.06416
214	37.00000	-0.60420	-0.35894	-0.27565
215	37.50000	-0.65375	-0.30318	-0.15893
216	38.00000	0.10075	-0.16704	0.02269
217	38.50000	0.41093	0.48451	0.17996
218	39.00000	0.75245	0.36947	0.07282
219	39.50000	0.06255	0.09750	0.23829
220	40.00000	-0.32576	-0.32351	-0.29580
221				
222	***速度反應量***			
223	時間(秒)	第0點速度	第1點速度	第2點速度
224	0.00000	0.00000	9.00000	0.00000
225	0.50000	0.99358	-9.08588	-0.24465
226	1.00000	-14.04659	-3.77331	0.04379
227	1.50000	-3.44336	-3.07247	-8.86579
228	2.00000	-0.75542	0.69482	7.61280
229	2.50000	14.08332	2.94614	-0.19173
230	3.00000	1.78250	11.87037	1.61119

231	3.50000	5.18683	-6.55677	0.57594
232	4.00000	-11.97648	-3.56951	0.33584
233	4.50000	-7.42981	-3.60689	-8.71605
234	5.00000	-2.55209	-3.19460	4.62928
235	5.50000	8.97992	3.15400	1.57246
236	6.00000	7.20647	10.81837	-0.55501
237	6.50000	4.83712	-1.15846	4.53819
238	7.00000	-4.37584	-4.90792	-1.71387
239	7.50000	-13.29732	-1.09006	-5.76174
240	8.00000	-1.44402	-8.49277	-0.08125
241	8.50000	0.87613	3.63960	4.16419
242	9.00000	11.82981	8.17069	-3.76891
243	9.50000	3.99124	3.78712	8.21829
244	10.00000	3.11170	-4.96532	-2.74508
245	10.50000	-15.47425	1.29217	-3.63336
246	11.00000	-2.26484	-11.44975	-2.59615
247	11.50000	-4.28417	1.51922	4.10922
248	12.00000	10.56982	6.99733	-4.58883
249	12.50000	6.66775	5.10658	8.31448
250	13.00000	5.86182	-1.74449	-0.25186
251	13.50000	-10.87514	1.49846	-4.55765
252	14.00000	-6.87280	-10.31943	-1.16832
253	14.50000	-4.40982	-3.61251	0.65962
254	15.00000	3.29085	7.72438	-2.65327
255	15.50000	11.88790	2.91551	5.11949
256	16.00000	4.76194	3.33953	4.47562
257	16.50000	-2.42353	0.79801	-6.94293
258	17.00000	-11.64520	-6.98571	1.98944
259	17.50000	-2.92726	-8.82065	-3.19132
260	18.00000	-4.79129	7.82960	-1.00160
261	18.50000	14.40031	0.26079	2.09249
262	19.00000	4.58335	6.59754	7.57409
263	19.50000	3.79427	2.13052	-7.24410
264	20.00000	-11.23429	-4.73813	3.21249
265	20.50000	-4.37452	-10.64943	-3.81547
266	21.00000	-8.37729	4.92784	-2.58342
267	21.50000	10.36199	-0.30185	2.02033
268	22.00000	8.13716	5.74779	6.68191
269	22.50000	4.67438	6.50756	-4.03420
270	23.00000	-4.48876	-4.67228	1.41083
271	23.50000	-8.88479	-8.58901	-0.78948
272	24.00000	-7.30524	-0.20438	-6.82484
273	24.50000	1.73755	0.58493	4.00030
274	25.00000	12.75050	2.15261	3.40915
275	25.50000	2.86816	11.48012	0.22972
276	26.00000	3.98552	-4.67492	-0.81799
277	26.50000	-11.72331	-5.42986	2.73335

278	27.00000	-6.08102	-4.06383	-10.06475
279	27.50000	-5.45632	0.05061	4.55835
280	28.00000	13.01669	-0.80522	1.50514
281	28.50000	3.24011	13.43149	1.72437
282	29.00000	8.39437	-2.07888	-0.19992
283	29.50000	-8.44189	-4.14985	3.51208
284	30.00000	-8.34626	-3.90846	-9.41414
285	30.50000	-7.19799	-3.46894	1.65029
286	31.00000	6.82397	-1.39704	2.75138
287	31.50000	7.01803	11.24006	-0.67859
288	32.00000	7.50921	2.99195	3.42241
289	32.50000	0.01457	-4.76858	1.72298
290	33.00000	-12.47368	-0.52077	-5.81830
291	33.50000	-5.23973	-8.08954	-2.88995
292	34.00000	-1.98867	-1.23597	5.09845
293	34.50000	10.16185	7.33348	-4.25444
294	35.00000	5.37754	7.34067	6.72366
295	35.50000	7.90846	-4.60960	0.63146
296	36.00000	-13.20756	2.75227	-2.97038
297	36.50000	-4.56865	-10.16003	-5.18460
298	37.00000	-7.33007	-3.15609	5.08134
299	37.50000	7.79511	5.00452	-5.43118
300	38.00000	6.31799	7.86043	6.39339
301	38.50000	10.43097	-1.63303	2.81528
302	39.00000	-7.56910	3.60864	-3.28042
303	39.50000	-7.45016	-7.98313	-3.44052
304	40.00000	-6.92777	-7.67739	1.82616
305				
306	*** 加速度反應量	***		
307	時間(秒)	第0點加速度	第1點加速度	第2點加速 ➡
	度			
308	0.00000	-60.00000	-40.00000	-210.00000
309	0.50000	-253.65704	72.53658	-80.31146
310	1.00000	124.58784	-255.81091	150.84298
311	1.50000	32.33061	190.16483	-37.87359
312	2.00000	104.32881	193.76735	-69.95062
313	2.50000	146.22697	-186.46438	200.20044
314	3.00000	-166.04225	63.96391	-84.44032
315	3.50000	-118.92881	-18.89619	-201.15310
316	4.00000	-85.12563	-198.18589	237.61900
317	4.50000	137.41762	57.24768	-140.28916
318	5.00000	-34.04558	290.12097	12.40533
319	5.50000	317.31255	-225.86937	132.23123
320	6.00000	-208.49007	147.41301	12.84068
321	6.50000	-35.79677	-48.70174	-262.27770
322	7.00000	-181.24051	-192.76250	258.56944
323	7.50000	109.62647	-8.25181	-162.05566

324	8.00000	-56.24746	285.19775	-7.15825
325	8.50000	318.43992	-182.52617	162.01390
326	9.00000	-85.10239	136.79493	3.30209
327	9.50000	-91.89025	34.18751	-205.72180
328	10.00000	-98.71229	-269.71310	176.79921
329	10.50000	-68.47478	16.71956	-81.69619
330	11.00000	37.47981	183.71560	-124.81005
331	11.50000	178.86692	-81.46940	264.00674
332	12.00000	128.95448	65.00480	-72.05710
333	12.50000	-200.02294	169.87403	-96.06918
334	13.00000	49.08788	-355.32260	73.17046
335	13.50000	-248.98601	55.00270	10.06751
336	14.00000	100.42107	83.66610	-233.81590
337	14.50000	61.37613	-23.86646	325.81623
338	15.00000	254.41000	29.10716	-100.75919
339	15.50000	-199.34095	250.04824	-50.83884
340	16.00000	98.88729	-350.79511	58.38004
341	16.50000	-272.29994	20.26789	12.94556
342	17.00000	7.65692	72.69373	-240.00014
343	17.50000	81.24360	-76.79000	271.43661
344	18.00000	196.58236	77.88756	-25.39264
345	18.50000	-40.35313	232.06420	-113.41902
346	19.00000	17.13673	-241.17438	151.02933
347	19.50000	-135.15219	-82.83803	-70.21759
348	20.00000	-197.54394	137.25163	-162.73926
349	20.50000	181.43296	-198.00283	145.60555
350	21.00000	43.16998	154.02475	91.15648
351	21.50000	151.26532	179.80380	-208.05766
352	22.00000	-67.02081	-114.41938	255.96049
353	22.50000	10.62764	-160.57835	-135.17300
354	23.00000	-341.92282	183.58765	-110.73412
355	23.50000	201.08198	-278.81583	66.27627
356	24.00000	-35.43744	155.27789	133.95116
357	24.50000	203.95440	187.36944	-225.98940
358	25.00000	-11.05820	-69.18616	266.92086
359	25.50000	26.45271	-132.51217	-90.77657
360	26.00000	-304.57551	146.40216	-159.72804
361	26.50000	60.89364	-258.45619	97.24833
362	27.00000	26.97604	47.65532	62.73767
363	27.50000	81.84166	270.64791	-147.38660
364	28.00000	174.98420	-112.07178	180.87322
365	28.50000	-63.16467	-21.76644	39.75532
366	29.00000	-144.09767	64.58988	-267.26021
367	29.50000	-140.12942	-184.92503	180.78449
368	30.00000	124.04544	-94.14112	-42.42856
369	30.50000	-80.07282	346.97099	-64.46491
370	31.00000	330.19124	-156.46794	98.54444



371	31.50000	-103.78640	66.51248	142.48432
372	32.00000	-31.54862	39.99667	-318.63457
373	32.50000	-224.74137	-156.37633	203.92636
374	33.00000	101.42476	-164.03715	-67.14171
375	33.50000	-125.12014	325.75203	-80.07636
376	34.00000	311.85534	-123.24262	111.09402
377	34.50000	10.33386	55.48403	135.57202
378	35.00000	-63.48027	124.32884	-253.61449
379	35.50000	-125.65718	-208.56431	125.02080
380	36.00000	-64.09873	-135.36474	14.07744
381	36.50000	-44.16109	210.35488	-193.42675
382	37.00000	147.15568	-31.47787	198.12006
383	37.50000	210.33980	-24.82217	56.48001
384	38.00000	-160.67634	258.90308	-134.25879
385	38.50000	44.14547	-273.07237	20.76993
386	39.00000	-229.78576	-84.13502	112.45940
387	39.50000	20.96806	98.65271	-298.93300
388	40.00000	1.35128	21.26411	249.59878

389

390 時間序列：

391	0.0000,	0.5000,	1.0000,	1.5000,	2.0000,
392	2.5000,	3.0000,	3.5000,	4.0000,	4.5000,
393	5.0000,	5.5000,	6.0000,	6.5000,	7.0000,
394	7.5000,	8.0000,	8.5000,	9.0000,	9.5000,
395	10.0000,	10.5000,	11.0000,	11.5000,	12.0000,
396	12.5000,	13.0000,	13.5000,	14.0000,	14.5000,
397	15.0000,	15.5000,	16.0000,	16.5000,	17.0000,
398	17.5000,	18.0000,	18.5000,	19.0000,	19.5000,
399	20.0000,	20.5000,	21.0000,	21.5000,	22.0000,
400	22.5000,	23.0000,	23.5000,	24.0000,	24.5000,
401	25.0000,	25.5000,	26.0000,	26.5000,	27.0000,
402	27.5000,	28.0000,	28.5000,	29.0000,	29.5000,
403	30.0000,	30.5000,	31.0000,	31.5000,	32.0000,
404	32.5000,	33.0000,	33.5000,	34.0000,	34.5000,
405	35.0000,	35.5000,	36.0000,	36.5000,	37.0000,
406	37.5000,	38.0000,	38.5000,	39.0000,	39.5000,
407	40.0000,				

408

409 第0點變位序列：

410	0.5000,	0.7132,	-0.0153,	-0.4529,	-0.6447,
411	-0.2808,	0.4679,	0.6263,	0.4090,	-0.3833,
412	-0.5142,	-0.6459,	0.3157,	0.5023,	0.6681,
413	-0.1377,	-0.4143,	-0.7728,	-0.0286,	0.4381,
414	0.6671,	0.2652,	-0.3586,	-0.6702,	-0.4494,
415	0.3640,	0.5090,	0.6350,	-0.2214,	-0.4998,
416	-0.7260,	0.1447,	0.3638,	0.7754,	0.0918,
417	-0.3899,	-0.7347,	-0.2341,	0.2823,	0.6636,

```
418    0.4985,    -0.3037,    -0.5541,    -0.6056,    0.1588,
419    0.4523,     0.7853,    -0.1072,    -0.3640,    -0.7624,
420   -0.1187,     0.2961,     0.8031,     0.2443,    -0.2514,
421   -0.6502,    -0.5022,     0.1942,     0.6027,     0.6126,
422   -0.1358,    -0.4066,    -0.7924,     0.0202,     0.3671,
423     0.7859,     0.1064,    -0.2074,    -0.8196,    -0.2978,
424     0.2167,     0.6795,     0.4622,    -0.0884,    -0.6042,
425   -0.6537,     0.1008,     0.4109,     0.7524,     0.0626,
426   -0.3258,
427
428  第1點變位序列 :
429     0.4000,     0.2904,     0.1923,    -0.3990,    -0.4709,
430   -0.0371,     0.1912,     0.4280,     0.2671,    -0.1542,
431   -0.5709,    -0.1171,    -0.0318,     0.4426,     0.3660,
432     0.0450,    -0.5081,    -0.2420,    -0.1705,     0.2850,
433     0.5026,     0.1510,    -0.2961,    -0.3720,    -0.2345,
434     0.0306,     0.5908,     0.2200,    -0.0540,    -0.3975,
435   -0.3020,    -0.1876,     0.5286,     0.3216,     0.1046,
436   -0.2545,    -0.4071,    -0.3014,     0.3108,     0.4383,
437     0.1692,    -0.0013,    -0.4821,    -0.3535,     0.0471,
438     0.4700,     0.2155,     0.2279,    -0.4231,    -0.4225,
439   -0.1371,     0.3402,     0.2955,     0.3458,    -0.2065,
440   -0.5138,    -0.2105,     0.0889,     0.3625,     0.3790,
441     0.0710,    -0.5400,    -0.2421,    -0.1527,     0.3145,
442     0.4113,     0.2755,    -0.4159,    -0.2998,    -0.2806,
443     0.1109,     0.4701,     0.3554,    -0.1620,    -0.3589,
444   -0.3032,    -0.1670,     0.4845,     0.3695,     0.0975,
445   -0.3235,
446
447  第2點變位序列 :
448     0.3000,     0.1697,    -0.0236,    -0.1344,    -0.1417,
449   -0.1483,     0.1328,     0.3053,    -0.0516,     0.0318,
450   -0.2366,    -0.1350,    -0.0213,     0.3519,    -0.0260,
451     0.1260,    -0.1985,    -0.2048,    -0.0704,     0.2511,
452     0.0832,     0.1149,    -0.0352,    -0.3248,    -0.0457,
453     0.0763,     0.1875,     0.0813,     0.1343,    -0.3762,
454   -0.0536,    -0.0411,     0.1725,     0.1200,     0.2018,
455   -0.2827,    -0.1459,    -0.0449,     0.0236,     0.2221,
456     0.1762,    -0.0976,    -0.2536,    -0.0027,    -0.1518,
457     0.2781,     0.1600,     0.0470,    -0.2585,    -0.0183,
458   -0.2328,     0.1966,     0.2247,     0.0735,    -0.1244,
459   -0.1072,    -0.2048,     0.0091,     0.3232,     0.0311,
460     0.0567,    -0.1730,    -0.1625,    -0.1561,     0.3382,
461     0.0286,     0.1550,    -0.1130,    -0.1940,    -0.2026,
462     0.2135,     0.1047,     0.1328,     0.0642,    -0.2757,
463   -0.1589,     0.0227,     0.1800,     0.0728,     0.2383,
464   -0.2958,
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465

466 第0點速度序列：

467	0.0000,	0.9936,	-14.0466,	-3.4434,	-0.7554,
468	14.0833,	1.7825,	5.1868,	-11.9765,	-7.4298,
469	-2.5521,	8.9799,	7.2065,	4.8371,	-4.3758,
470	-13.2973,	-1.4440,	0.8761,	11.8298,	3.9912,
471	3.1117,	-15.4743,	-2.2648,	-4.2842,	10.5698,
472	6.6677,	5.8618,	-10.8751,	-6.8728,	-4.4098,
473	3.2909,	11.8879,	4.7619,	-2.4235,	-11.6452,
474	-2.9273,	-4.7913,	14.4003,	4.5833,	3.7943,
475	-11.2343,	-4.3745,	-8.3773,	10.3620,	8.1372,
476	4.6744,	-4.4888,	-8.8848,	-7.3052,	1.7376,
477	12.7505,	2.8682,	3.9855,	-11.7233,	-6.0810,
478	-5.4563,	13.0167,	3.2401,	8.3944,	-8.4419,
479	-8.3463,	-7.1980,	6.8240,	7.0180,	7.5092,
480	0.0146,	-12.4737,	-5.2397,	-1.9887,	10.1619,
481	5.3775,	7.9085,	-13.2076,	-4.5686,	-7.3301,
482	7.7951,	6.3180,	10.4310,	-7.5691,	-7.4502,
483	-6.9278,				

484

485 第1點速度序列：

486	9.0000,	-9.0859,	-3.7733,	-3.0725,	0.6948,
487	2.9461,	11.8704,	-6.5568,	-3.5695,	-3.6069,
488	-3.1946,	3.1540,	10.8184,	-1.1585,	-4.9079,
489	-1.0901,	-8.4928,	3.6396,	8.1707,	3.7871,
490	-4.9653,	1.2922,	-11.4498,	1.5192,	6.9973,
491	5.1066,	-1.7445,	1.4985,	-10.3194,	-3.6125,
492	7.7244,	2.9155,	3.3395,	0.7980,	-6.9857,
493	-8.8207,	7.8296,	0.2608,	6.5975,	2.1305,
494	-4.7381,	-10.6494,	4.9278,	-0.3019,	5.7478,
495	6.5076,	-4.6723,	-8.5890,	-0.2044,	0.5849,
496	2.1526,	11.4801,	-4.6749,	-5.4299,	-4.0638,
497	0.0506,	-0.8052,	13.4315,	-2.0789,	-4.1499,
498	-3.9085,	-3.4689,	-1.3970,	11.2401,	2.9920,
499	-4.7686,	-0.5208,	-8.0895,	-1.2360,	7.3335,
500	7.3407,	-4.6096,	2.7523,	-10.1600,	-3.1561,
501	5.0045,	7.8604,	-1.6330,	3.6086,	-7.9831,
502	-7.6774,				

503

504 第2點速度序列：

505	0.0000,	-0.2446,	0.0438,	-8.8658,	7.6128,
506	-0.1917,	1.6112,	0.5759,	0.3358,	-8.7160,
507	4.6293,	1.5725,	-0.5550,	4.5382,	-1.7139,
508	-5.7617,	-0.0813,	4.1642,	-3.7689,	8.2183,
509	-2.7451,	-3.6334,	-2.5961,	4.1092,	-4.5888,
510	8.3145,	-0.2519,	-4.5576,	-1.1683,	0.6596,
511	-2.6533,	5.1195,	4.4756,	-6.9429,	1.9894,

512	-3.1913,	-1.0016,	2.0925,	7.5741,	-7.2441,
513	3.2125,	-3.8155,	-2.5834,	2.0203,	6.6819,
514	-4.0342,	1.4108,	-0.7895,	-6.8248,	4.0003,
515	3.4091,	0.2297,	-0.8180,	2.7333,	-10.0648,
516	4.5583,	1.5051,	1.7244,	-0.1999,	3.5121,
517	-9.4141,	1.6503,	2.7514,	-0.6786,	3.4224,
518	1.7230,	-5.8183,	-2.8899,	5.0984,	-4.2544,
519	6.7237,	0.6315,	-2.9704,	-5.1846,	5.0813,
520	-5.4312,	6.3934,	2.8153,	-3.2804,	-3.4405,
521	1.8262,				
522					

523 第0點加速度序列：

524	-60.0000,	-253.6570,	124.5878,	32.3306,	104.3288,
525	146.2270,	-166.0423,	-118.9288,	-85.1256,	137.4176,
526	-34.0456,	317.3125,	-208.4901,	-35.7968,	-181.2405,
527	109.6265,	-56.2475,	318.4399,	-85.1024,	-91.8903,
528	-98.7123,	-68.4748,	37.4798,	178.8669,	128.9545,
529	-200.0229,	49.0879,	-248.9860,	100.4211,	61.3761,
530	254.4100,	-199.3410,	98.8873,	-272.2999,	7.6569,
531	81.2436,	196.5824,	-40.3531,	17.1367,	-135.1522,
532	-197.5439,	181.4330,	43.1700,	151.2653,	-67.0208,
533	10.6276,	-341.9228,	201.0820,	-35.4374,	203.9544,
534	-11.0582,	26.4527,	-304.5755,	60.8936,	26.9760,
535	81.8417,	174.9842,	-63.1647,	-144.0977,	-140.1294,
536	124.0454,	-80.0728,	330.1912,	-103.7864,	-31.5486,
537	-224.7414,	101.4248,	-125.1201,	311.8553,	10.3339,
538	-63.4803,	-125.6572,	-64.0987,	-44.1611,	147.1557,
539	210.3398,	-160.6763,	44.1455,	-229.7858,	20.9681,
540	1.3513,				
541					

542 第1點加速度序列：

543	-40.0000,	72.5366,	-255.8109,	190.1648,	193.7673,
544	-186.4644,	63.9639,	-18.8962,	-198.1859,	57.2477,
545	290.1210,	-225.8694,	147.4130,	-48.7017,	-192.7625,
546	-8.2518,	285.1977,	-182.5262,	136.7949,	34.1875,
547	-269.7131,	16.7196,	183.7156,	-81.4694,	65.0048,
548	169.8740,	-355.3226,	55.0027,	83.6661,	-23.8665,
549	29.1072,	250.0482,	-350.7951,	20.2679,	72.6937,
550	-76.7900,	77.8876,	232.0642,	-241.1744,	-82.8380,
551	137.2516,	-198.0028,	154.0247,	179.8038,	-114.4194,
552	-160.5784,	183.5876,	-278.8158,	155.2779,	187.3694,
553	-69.1862,	-132.5122,	146.4022,	-258.4562,	47.6553,
554	270.6479,	-112.0718,	-21.7664,	64.5899,	-184.9250,
555	-94.1411,	346.9710,	-156.4679,	66.5125,	39.9967,
556	-156.3763,	-164.0372,	325.7520,	-123.2426,	55.4840,
557	124.3288,	-208.5643,	-135.3647,	210.3549,	-31.4779,
558	-24.8222,	258.9031,	-273.0724,	-84.1350,	98.6527,

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559     21.2641,
560
561     第2點加速度序列 :
562     -210.0000,    -80.3115,    150.8430,    -37.8736,    -69.9506,
563     200.2004,    -84.4403,    -201.1531,    237.6190,    -140.2892,
564     12.4053,     132.2312,     12.8407,    -262.2777,    258.5694,
565    -162.0557,     -7.1583,    162.0139,     3.3021,    -205.7218,
566     176.7992,    -81.6962,    -124.8101,    264.0067,    -72.0571,
567    -96.0692,     73.1705,     10.0675,    -233.8159,    325.8162,
568    -100.7592,    -50.8388,     58.3800,     12.9456,    -240.0001,
569     271.4366,    -25.3926,    -113.4190,    151.0293,    -70.2176,
570    -162.7393,    145.6055,     91.1565,    -208.0577,    255.9605,
571    -135.1730,   -110.7341,     66.2763,    133.9512,    -225.9894,
572     266.9209,    -90.7766,    -159.7280,     97.2483,     62.7377,
573    -147.3866,    180.8732,     39.7553,    -267.2602,    180.7845,
574     -42.4286,    -64.4649,     98.5444,    142.4843,    -318.6346,
575     203.9264,    -67.1417,    -80.0764,    111.0940,    135.5720,
576    -253.6145,    125.0208,     14.0774,    -193.4267,    198.1201,
577     56.4800,   -134.2588,     20.7699,    112.4594,    -298.9330,
578     249.5988,
579
580     */
581
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