

```

1 "E:\1 \ \ \ \ \3 \ \ \ \ \ \1 \ \ \ \ \ \ \ \ \ \ \1 \ \ \ \ \ \ \ \ \ \ \ \1 \_LW_ \ \ \ \ \ \4 \ \ \ \ \ \3 python_code\1 exzample\2 \ \ \ \ \ \ \ \ \ \ \ \9 Code for
  this paper\Scripts\python.exe" "D:\Python\Pycharm\setroute\PyCharm Community Edition 2021.2.3\plugins\python-ce\helpers\pydev\pydevconsole.py" --mode=
  client --port=27097
2
3 import sys; print('Python %s on %s' % (sys.version, sys.platform))
4 sys.path.extend(['E:\\1 \ \ \ \ \ \3 \ \ \ \ \ \ \ \ \ \ \ \1 \ \ \ \ \ \ \ \ \ \ \ \1 \_LW_ \ \ \ \ \ \4 \ \ \ \ \ \3 python_code\\9 Code for this
  paper', 'E:/1 \ \ \ \ \ \3 \ \ \ \ \ \ /1 \ \ \ \ \ \ \ \ \ \ \ \ /1 \ \ \ \ \ \ \ \ \ \ \ \ /1 \_LW_ \ \ \ \ \ \4 \ \ \ \ \ \3 python_code/9 Code for this paper'])
5
6 PyDev console: starting.
7
8 Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AMD64)] on win32
9 >>> runfile('E:/1 \ \ \ \ \ \3 \ \ \ \ \ \ /1 \ \ \ \ \ \ \ \ \ \ \ \ /1 \ \ \ \ \ \ \ \ \ \ \ \ /1 \_LW_ \ \ \ \ \ \4 \ \ \ \ \ \3 python_code/9 Code for this paper/
  main_RO_CCG.py', wdir='E:/1 \ \ \ \ \ \3 \ \ \ \ \ \ /1 \ \ \ \ \ \ \ \ \ \ \ \ /1 \ \ \ \ \ \ \ \ \ \ \ \ /1 \_LW_ \ \ \ \ \ \4 \ \ \ \ \ \3 python_code/9 Code for
  this paper')
10 Backend TkAgg is interactive backend. Turning interactive mode on.
11 Waiting 5s.....
12 Set parameter MIPGap to value 1e-10
13 Gurobi Optimizer version 10.0.2 build v10.0.2rc0 (win64)
14
15 CPU model: 11th Gen Intel(R) Core(TM) i7-11370H @ 3.30GHz, instruction set [SSE2|AVX|AVX2|AVX512]
16 Thread count: 4 physical cores, 8 logical processors, using up to 8 threads
17
18 Optimize a model with 377728 rows, 34789 columns and 1041116 nonzeros
19 Model fingerprint: 0x46f72647
20 Variable types: 1 continuous, 34788 integer (34764 binary)
21 Coefficient statistics:
22 Matrix range [1e+00, 1e+10]
23 Objective range [1e+00, 2e+01]
24 Bounds range [1e+00, 1e+00]
25 RHS range [1e+00, 2e+10]
26 Warning: Model contains large matrix coefficients
27 Warning: Model contains large rhs
28 Consider reformulating model or setting NumericFocus parameter
29 to avoid numerical issues.
30 Presolve removed 213113 rows and 13994 columns (presolve time = 5s) ...
31 Presolve removed 337449 rows and 22786 columns
32 Presolve time: 5.97s
33 Presolved: 40279 rows, 12003 columns, 163014 nonzeros
34 Variable types: 0 continuous, 12003 integer (11988 binary)
35
36 Deterministic concurrent LP optimizer: primal and dual simplex (primal and dual model)
37 Showing first log only...
38
39 Root relaxation presolved: 40277 rows, 12003 columns, 163010 nonzeros
40
41
42 Root simplex log...
43
44 Iteration Objective Primal Inf. Dual Inf. Time
45 0 1.0480000e+03 6.525000e+01 1.369523e+08 6s
46 Concurrent spin time: 0.02s
47
48 Solved with dual simplex (primal model)
49
50 Root relaxation: objective 7.880000e+02, 1547 iterations, 0.20 seconds (0.18 work units)
51
52 Nodes | Current Node | Objective Bounds | Work
53 Expl Unexpl | Obj Depth IntInf | Incumbent BestBd Gap | It/Node Time
54
55 0 0 788.00000 0 17 - 788.00000 - - 6s
56 H 0 0 1768.0000000 788.00000 55.4% - 6s
57 H 0 0 788.0000000 788.00000 0.00% - 7s
58 0 0 788.00000 0 112 788.00000 788.00000 0.00% - 7s
59
60 Cutting planes:
61 Gomory: 7
62 Cover: 36
63 Implied bound: 6
64 Clique: 2
65 MIR: 32
66 StrongCG: 20
67 GUB cover: 1
68 Zero half: 1
69 RLT: 12
70 Relax-and-lift: 6
71
72 Explored 1 nodes (4325 simplex iterations) in 7.23 seconds (12.17 work units)
73 Thread count was 8 (of 8 available processors)
74
75 Solution count 2: 788 1768
76
77 Optimal solution found (tolerance 1.00e-10)
78 Best objective 7.8800000000000e+02, best bound 7.8800000000000e+02, gap 0.0000%
79 Set parameter MIPGap to value 1e-08

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80 Gurobi Optimizer version 10.0.2 build v10.0.2rc0 (win64)
81
82 CPU model: 11th Gen Intel(R) Core(TM) i7-11370H @ 3.30GHz, instruction set [SSE2|AVX|AVX2|AVX512]
83 Thread count: 4 physical cores, 8 logical processors, using up to 8 threads
84
85 Optimize a model with 1153782 rows, 901813 columns and 7829634 nonzeros
86 Model fingerprint: 0xa106148e
87 Variable types: 441325 continuous, 460488 integer (456438 binary)
88 Coefficient statistics:
89   Matrix range    [1e-01, 1e+10]
90   Objective range [6e-05, 5e+01]
91   Bounds range    [1e+00, 8e+01]
92   RHS range       [8e-01, 1e+10]
93 Warning: Model contains large matrix coefficients
94 Warning: Model contains large rhs
95   Consider reformulating model or setting NumericFocus parameter
96   to avoid numerical issues.
97 Presolve removed 1151511 rows and 900922 columns
98 Presolve time: 2.68s
99 Presolved: 2271 rows, 891 columns, 6113 nonzeros
100 Variable types: 4 continuous, 887 integer (498 binary)
101 Found heuristic solution: objective 3790.3983806
102 Found heuristic solution: objective 3850.3983806
103
104 Root relaxation: objective 5.221000e+03, 575 iterations, 0.00 seconds (0.00 work units)
105
106   Nodes | Current Node | Objective Bounds | Work
107   Expl Unexpl | Obj Depth IntInf | Incumbent BestBd Gap | It/Node Time
108
109 H  0  0           5221.0000000 10131.0000 94.0% - 3s
110   0  0   -  0    5221.00000 5221.00000 0.00% - 3s
111
112 Explored 1 nodes (836 simplex iterations) in 3.41 seconds (3.69 work units)
113 Thread count was 8 (of 8 available processors)
114
115 Solution count 3: 5221 3850.4 3790.4
116
117 Optimal solution found (tolerance 1.00e-08)
118 Best objective 5.221000000000e+03, best bound 5.221000000000e+03, gap 0.0000%
119 SP is solved
120 SP's optimal solution is'□5221
121
122 Itr = 0
123 Collect_LB = [788.0]
124 Collect_UB = [11230.000000000004]
125 Collect_Hua = [0.0]
126 Collect_SPObjVal = [5221.000000000002]
127 Collect_MPObjValNHua = [788.0]
128
129
130 Set parameter MIPGap to value 0.05
131 Gurobi Optimizer version 10.0.2 build v10.0.2rc0 (win64)
132
133 CPU model: 11th Gen Intel(R) Core(TM) i7-11370H @ 3.30GHz, instruction set [SSE2|AVX|AVX2|AVX512]
134 Thread count: 4 physical cores, 8 logical processors, using up to 8 threads
135
136 Optimize a model with 634976 rows, 150727 columns and 1862815 nonzeros
137 Model fingerprint: 0x5c69b2c1
138 Variable types: 1 continuous, 150726 integer (143124 binary)
139 Coefficient statistics:
140   Matrix range    [1e-01, 1e+10]
141   Objective range [1e+00, 2e+01]
142   Bounds range    [1e+00, 1e+00]
143   RHS range       [1e+00, 2e+10]
144 Warning: Model contains large matrix coefficients
145 Warning: Model contains large rhs
146   Consider reformulating model or setting NumericFocus parameter
147   to avoid numerical issues.
148 Presolve removed 477983 rows and 131076 columns (presolve time = 5s) ...
149 Presolve removed 562733 rows and 139982 columns
150 Presolve time: 8.88s
151 Presolved: 72243 rows, 10745 columns, 222289 nonzeros
152 Variable types: 0 continuous, 10745 integer (8826 binary)
153
154 Deterministic concurrent LP optimizer: primal and dual simplex (primal and dual model)
155 Showing first log only...
156
157 Root relaxation presolved: 10745 rows, 82988 columns, 233034 nonzeros
158
159
160 Root simplex log...
161
162 Iteration Objective Primal Inf. Dual Inf. Time
163   0 6.0610000e+03 0.000000e+00 3.524394e+04 9s

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164 6887 6.0687971e+03 0.000000e+00 1.580902e+05 10s
165 Concurrent spin time: 0.43s
166
167 Solved with dual simplex (primal model)
168
169 Root relaxation: objective 6.061000e+03, 5171 iterations, 1.21 seconds (1.42 work units)
170
171 Nodes | Current Node | Objective Bounds | Work
172 Expl Unexpl | Obj Depth IntInf | Incumbent BestBd Gap | It/Node Time
173
174 0 0 6061.00000 0 207 - 6061.00000 - - 12s
175 0 0 6061.00000 0 182 - 6061.00000 - - 12s
176 0 0 6061.00000 0 184 - 6061.00000 - - 12s
177 0 0 6061.00000 0 182 - 6061.00000 - - 12s
178 0 0 6061.00000 0 427 - 6061.00000 - - 14s
179 0 0 6061.00000 0 368 - 6061.00000 - - 15s
180 0 0 6061.00000 0 509 - 6061.00000 - - 15s
181 0 0 6061.00000 0 479 - 6061.00000 - - 16s
182 0 0 6061.00000 0 200 - 6061.00000 - - 32s
183 H 0 0 6521.0000000 6061.00000 7.05% - 33s
184 H 0 0 6261.0000000 6061.00000 3.19% - 33s
185 0 0 6061.00000 0 278 6261.00000 6061.00000 3.19% - 33s
186
187 Cutting planes:
188 Learned: 20
189 Gomory: 6
190 Cover: 468
191 Implied bound: 62
192 Clique: 126
193 MIR: 344
194 StrongCG: 10
195 Flow cover: 17
196 GUB cover: 195
197 Zero half: 47
198 RLT: 33
199 Relax-and-lift: 98
200 BQP: 8
201
202 Explored 1 nodes (49894 simplex iterations) in 33.44 seconds (47.21 work units)
203 Thread count was 8 (of 8 available processors)
204
205 Solution count 2: 6261 6521
206
207 Optimal solution found (tolerance 5.00e-02)
208 Best objective 6.261000000000e+03, best bound 6.061000000000e+03, gap 3.1944%
209 Set parameter MIPGap to value 1e-08
210 Gurobi Optimizer version 10.0.2 build v10.0.2rc0 (win64)
211
212 CPU model: 11th Gen Intel(R) Core(TM) i7-11370H @ 3.30GHz, instruction set [SSE2|AVX|AVX2|AVX512]
213 Thread count: 4 physical cores, 8 logical processors, using up to 8 threads
214
215 Optimize a model with 1153782 rows, 901813 columns and 7829634 nonzeros
216 Model fingerprint: 0xda53f6bc
217 Variable types: 441325 continuous, 460488 integer (456438 binary)
218 Coefficient statistics:
219 Matrix range [1e-01, 1e+10]
220 Objective range [6e-05, 5e+01]
221 Bounds range [1e+00, 8e+01]
222 RHS range [8e-01, 1e+10]
223 Warning: Model contains large matrix coefficients
224 Warning: Model contains large rhs
225 Consider reformulating model or setting NumericFocus parameter
226 to avoid numerical issues.
227 Presolve removed 1148737 rows and 900108 columns
228 Presolve time: 2.41s
229 Presolved: 5045 rows, 1705 columns, 13442 nonzeros
230 Variable types: 4 continuous, 1701 integer (975 binary)
231
232 Root relaxation: objective 5.472000e+03, 1528 iterations, 0.02 seconds (0.02 work units)
233
234 Nodes | Current Node | Objective Bounds | Work
235 Expl Unexpl | Obj Depth IntInf | Incumbent BestBd Gap | It/Node Time
236
237 H 0 0 5472.0000000 15140.0000 177% - 3s
238 0 0 - 0 5472.00000 5472.00000 0.00% - 3s
239
240 Explored 1 nodes (2244 simplex iterations) in 3.18 seconds (3.43 work units)
241 Thread count was 8 (of 8 available processors)
242
243 Solution count 1: 5472
244
245 Optimal solution found (tolerance 1.00e-08)
246 Best objective 5.472000000000e+03, best bound 5.472000000000e+03, gap 0.0000%
247 SP is solved

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248 SP's optimal solution is' 5472
249
250 Itr = 1
251 Collect_LB = [788.0, 6261.0]
252 Collect_UB = [11230.000000000004, 6512.000000000002]
253 Collect_Hua = [0.0, 5221.0]
254 Collect_SPObjVal = [5221.000000000002, 5472.000000000002]
255 Collect_MPObjValNHua = [788.0, 1040.0]
256
257
258 Set parameter MIPGap to value 0.05
259 Gurobi Optimizer version 10.0.2 build v10.0.2rc0 (win64)
260
261 CPU model: 11th Gen Intel(R) Core(TM) i7-11370H @ 3.30GHz, instruction set [SSE2|AVX|AVX2|AVX512]
262 Thread count: 4 physical cores, 8 logical processors, using up to 8 threads
263
264 Optimize a model with 887579 rows, 163849 columns and 2679854 nonzeros
265 Model fingerprint: 0x2f81b669
266 Variable types: 1 continuous, 163848 integer (148668 binary)
267 Coefficient statistics:
268   Matrix range    [1e-01, 1e+10]
269   Objective range [1e+00, 2e+01]
270   Bounds range    [1e+00, 1e+00]
271   RHS range       [1e+00, 2e+10]
272 Warning: Model contains large matrix coefficients
273 Warning: Model contains large rhs
274   Consider reformulating model or setting NumericFocus parameter
275   to avoid numerical issues.
276 Presolve removed 692684 rows and 139590 columns (presolve time = 5s) ...
277 Presolve removed 710007 rows and 140153 columns (presolve time = 10s) ...
278 Presolve removed 781454 rows and 148690 columns
279 Presolve time: 13.13s
280 Presolved: 106125 rows, 15159 columns, 346673 nonzeros
281 Variable types: 0 continuous, 15159 integer (11336 binary)
282
283 Deterministic concurrent LP optimizer: primal and dual simplex (primal and dual model)
284 Showing first log only...
285
286 Root relaxation presolved: 15159 rows, 121284 columns, 361832 nonzeros
287
288
289 Root simplex log...
290
291 Iteration   Objective    Primal Inf.   Dual Inf.    Time
292      0   6.3120000e+03   0.000000e+00   6.946088e+04   14s
293  12342   6.3261663e+03   0.000000e+00   3.907429e+05   15s
294  15943   6.3120000e+03   0.000000e+00   0.000000e+00   16s
295  15943   6.3120000e+03   0.000000e+00   0.000000e+00   16s
296 Concurrent spin time: 0.57s
297
298 Solved with primal simplex
299
300 Root relaxation: objective 6.312000e+03, 15943 iterations, 2.76 seconds (3.44 work units)
301 Total elapsed time = 20.11s
302
303   Nodes | Current Node | Objective Bounds | Work
304 Expl Unexpl | Obj Depth IntInf | Incumbent BestBd Gap | It/Node Time
305
306   0   0 6312.00000   0 680    -6312.00000   -   -   21s
307   0   0 6312.00000   0 963    -6312.00000   -   -   26s
308   0   0 6312.00000   0 908    -6312.00000   -   -   27s
309   0   0 6312.00000   0 816    -6312.00000   -   -   28s
310   0   0 6312.00000   0 815    -6312.00000   -   -   28s
311   0   0 6312.00000   0 377    -6312.00000   -   -   34s
312   0   0 6312.00000   0 373    -6312.00000   -   -   34s
313   0   0 6312.00000   0 670    -6312.00000   -   -   36s
314   0   0 6312.00000   0 667    -6312.00000   -   -   36s
315   0   0 6312.00000   0 382    -6312.00000   -   -   45s
316   0   0 6312.00000   0 618    -6312.00000   -   -   46s
317   0   0 6312.00000   0 602    -6312.00000   -   -   46s
318   0   0 6312.00000   0 426    -6312.00000   -   -   56s
319   0   0 6312.00000   0 438    -6312.00000   -   -   56s
320   0   0 6312.00000   0 437    -6312.00000   -   -   56s
321   0   0 6312.00000   0 693    -6312.00000   -   -   58s
322   0   0 6312.00000   0 447    -6312.00000   -   -   67s
323   0   0 6312.00000   0 513    -6312.00000   -   -   67s
324   0   0 6312.00000   0 577    -6312.00000   -   -   68s
325   0   0 6312.00000   0 420    -6312.00000   -   -   74s
326   0   0 6312.00000   0 403    -6312.00000   -   -   74s
327   0   0 6312.00000   0 387    -6312.00000   -   -   77s
328   0   2 6312.00000   0 237    -6312.00000   -   -   85s
329   3   8 6312.00000   2 763    -6312.00000   - 5850 90s
330  11  16 6312.00000   4 867    -6312.00000   - 4464 102s
331  19  23 6312.00000   6 854    -6312.00000   - 2970 108s

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332 23 29 6312.00000 7 756 - 6312.00000 - 3062 112s
333 34 51 6312.00000 9 750 - 6312.00000 - 2683 121s
334 52 76 6312.00000 13 745 - 6312.00000 - 2173 132s
335 82 151 6312.00000 21 665 - 6312.00000 - 2295 147s
336 209 286 6312.00000 53 659 - 6312.00000 - 1387 168s
337 478 451 6312.00000 99 560 - 6312.00000 - 749 184s
338 713 623 6312.00000 124 522 - 6312.00000 - 620 201s
339 932 1096 6312.00000 179 537 - 6312.00000 - 550 224s
340 1505 1455 6312.00000 231 536 - 6312.00000 - 400 243s
341 1958 1456 6852.00000 243 387 - 6312.00000 - 352 297s
342 1960 1457 6752.00000 63 577 - 6312.00000 - 351 323s
343 1961 1458 6392.00000 300 372 - 6312.00000 - 351 362s
344 1962 1459 6992.00000 236 790 - 6312.00000 - 351 379s
345 1963 1459 6752.00000 63 778 - 6312.00000 - 351 407s
346 1964 1460 6972.00000 194 895 - 6312.00000 - 351 428s
347 1965 1461 6312.00000 36 544 - 6312.00000 - 351 457s
348 1966 1461 6752.00000 21 907 - 6312.00000 - 350 499s
349 1967 1462 6392.00000 441 967 - 6312.00000 - 350 627s
350 1968 1463 6392.00000 442 1069 - 6312.00000 - 350 632s
351 H 1968 1389 6512.0000000 6312.00000 3.07% 350 653s
352
353 Cutting planes:
354 Learned: 2
355 Gomory: 5
356 Cover: 390
357 Implied bound: 550
358 Projected implied bound: 57
359 Clique: 97
360 MIR: 156
361 StrongCG: 332
362 Flow cover: 573
363 GUB cover: 76
364 Zero half: 167
365 RLT: 66
366 Relax-and-lift: 136
367 BQP: 11
368
369 Explored 1968 nodes (1115257 simplex iterations) in 653.81 seconds (1199.37 work units)
370 Thread count was 8 (of 8 available processors)
371
372 Solution count 1: 6512
373
374 Optimal solution found (tolerance 5.00e-02)
375 Best objective 6.512000000000e+03, best bound 6.312000000000e+03, gap 3.0713%
376 Warning: linear constraint 382374 and linear constraint 634977 have the same name "ConSP25_1[0,0]"
377 Set parameter MIPGap to value 1e-08
378 Gurobi Optimizer version 10.0.2 build v10.0.2rc0 (win64)
379
380 CPU model: 11th Gen Intel(R) Core(TM) i7-11370H @ 3.30GHz, instruction set [SSE2|AVX|AVX2|AVX512]
381 Thread count: 4 physical cores, 8 logical processors, using up to 8 threads
382
383 Optimize a model with 1153782 rows, 901813 columns and 7829634 nonzeros
384 Model fingerprint: 0xe45451d2
385 Variable types: 441325 continuous, 460488 integer (456438 binary)
386 Coefficient statistics:
387 Matrix range [1e-01, 1e+10]
388 Objective range [6e-05, 5e+01]
389 Bounds range [1e+00, 8e+01]
390 RHS range [8e-01, 1e+10]
391 Warning: Model contains large matrix coefficients
392 Warning: Model contains large rhs
393 Consider reformulating model or setting NumericFocus parameter
394 to avoid numerical issues.
395 Presolve removed 1147852 rows and 899895 columns
396 Presolve time: 2.90s
397 Presolved: 5930 rows, 1918 columns, 15957 nonzeros
398 Variable types: 4 continuous, 1914 integer (1082 binary)
399 Found heuristic solution: objective 3852.0026652
400
401 Root relaxation: objective 5.472000e+03, 1804 iterations, 0.02 seconds (0.02 work units)
402
403 Nodes | Current Node | Objective Bounds | Work
404 Expl Unexpl | Obj Depth IntInf | Incumbent BestBd Gap | It/Node Time
405
406 H 0 0 5472.0000000 17260.0000 215% - 3s
407 0 0 - 0 5472.00000 5472.00000 0.00% - 3s
408
409 Explored 1 nodes (2440 simplex iterations) in 3.86 seconds (3.50 work units)
410 Thread count was 8 (of 8 available processors)
411
412 Solution count 2: 5472 3852
413
414 Optimal solution found (tolerance 1.00e-08)
415 Best objective 5.472000000000e+03, best bound 5.472000000000e+03, gap 0.0000%

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```
416 SP is solved
417 SP's optimal solution is'□5472
418
419 Itr = 2
420 Collect_LB = [788.0, 6261.0, 6512.0]
421 Collect_UB = [11230.000000000004, 6512.000000000002, 6512.000000000002]
422 Collect_Hua = [0.0, 5221.0, 5472.0]
423 Collect_SPObjVal = [5221.000000000002, 5472.000000000002, 5472.000000000002]
424 Collect_MPObjValNHua = [788.0, 1040.0, 1040.0]
425
426
427 Reach the termination conditions, stop iteration
428 Values adopted from the Itr' th iteration, and Itr = {2}, judgeCount = {2}
429
430 ~~~~~judge = 2, SPObj_SPF = 5472.000000000002
431 Vessel i: 0: pi: 12-19, ai-di: 8-25, gi_SP-gpi_SP: 0.000000-0.000000, ai_SP-di: 8-25, taoi-deltai: 8-25, taoPi_SP-deltaPi_SP: 8-25, betaNi: 17
, bi: 17
432 Vessel i: 1: pi: 6-12, ai-di: 14-24, gi_SP-gpi_SP: 0.000000-0.000000, ai_SP-di: 14-24, taoi-deltai: 14-25, taoPi_SP-deltaPi_SP: 14-25, betaNi
: 11, bi: 11
433 Vessel i: 2: pi: 20-26, ai-di: 14-49, gi_SP-gpi_SP: 0.000000-0.000000, ai_SP-di: 14-49, taoi-deltai: 14-47, taoPi_SP-deltaPi_SP: 14-47,
betaNi: 33, bi: 33
434 Vessel i: 3: pi: 15-20, ai-di: 22-48, gi_SP-gpi_SP: 0.000000-0.000000, ai_SP-di: 22-48, taoi-deltai: 26-53, taoPi_SP-deltaPi_SP: 26-53,
betaNi: 27, bi: 27
435 Vessel i: 4: pi: 20-26, ai-di: 43-56, gi_SP-gpi_SP: 1.000000-0.600000, ai_SP-di: 48-56, taoi-deltai: 48-58, taoPi_SP-deltaPi_SP: 48-58,
betaNi: 10, bi: 10
436 Vessel i: 5: pi: 10-15, ai-di: 35-75, gi_SP-gpi_SP: 0.200000-0.600000, ai_SP-di: 35-75, taoi-deltai: 38-72, taoPi_SP-deltaPi_SP: 38-72,
betaNi: 34, bi: 34
437
438 round LB = [788, 6261, 6512]
439 round UB = [11230, 6512, 6512]
440 round Hua = [0, 5221, 5472]
441 round SPObjVal = [5221, 5472, 5472]
442 round MPObjValNHua = [788, 1040, 1040]
443
444 Time: 944.000000
445
446
447
448
```