```
this paper\Scripts\python.exe" "D:\Python\Pycharm\setroute\PyCharm Community Edition 2021.2.3\plugins\python-ce\helpers\pydev\pydevconsole.py" --mode=
  3
       import sys; print('Python %s on %s' % (sys.version, sys.platform))
      6
      PyDev console: starting.
      Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AMD64)] on win32
  8
      >>> runfile('E:/1 = 1 = 1/3 = 1 = 1/3 = 1 = 1/3 = 1 = 1/3 = 1 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/3 = 1/
       python_code/9 Code for this paper')
      Backend TkAgg is interactive backend. Turning interactive mode on.
       Waiting 5s.....
12
      Optimize the ./R_40_1.xlsx instance by ECCG
13
14
15
               Master protblem status = 2, is Optimal and MP obj = 1298.0
                                               ub = inf
      The initial lb = -inf
16
17
       The current iteration cnt = 0
19
               The SP model was solved Optimal 2 and SPObj = 1298.0
20
               Deterministic Sub problem Status= 2, is Optimal
21
               Master protblem status = 2, is Optimal
               1b = 2512.0
                                                            ub = 2512.0
                                                     MP_delete_Hua_Obj = 1326.0
23
                MPObj = 2512.0
                                                                                                             Hua = 1186.0
                                                                                                                                                SPObi = 1298.0
                                                                                                                                                                                     Deter SP Obj = 1186.0
24
25
      ub - 1b = 0.0
26
      Iteration cycle stopped by termination criterion 1: Because ub - lb \leq eps, the iteration stop, and cnt = 0
27
28
            i: 0.0 1_i: 3.0 p_i: 4.0 aI_i: 3.0
                                                                                  sol_a_i: 3.0 sol_g_i: 0.0 d_i: 15.0 sol_taoi: 3.0 sol_deltai: 12.0 sol_deltai - sol_taoi: 9.0 sol_taoP: 3.0
            sol_deltaP: 6.0 sol_deltaP - sol_taoP: 3.0 cl_i: 2372796.0 sol_c_i: 2372796.0 sol_gp_i: 0.0 total work: 2372796.0 wasted work: 0.0
                                                                              sol_a_i: 24.0 sol_g_i: 0.0 d_i: 34.0 sol_taoi: 24.0 sol_deltai: 31.0 sol_deltai - sol_taoi: 7.0 sol_taoP:
29
            i: 1.0 1_i: 5.0 p_i: 6.0 aI i: 24.0
                   sol_deltaP: 26.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1845508.0 sol_c_i: 1845508.0 sol_gp_i: 0.0 total work: 1845508.0 wasted work: 0.0
                                                                                  sol_a_i: 5.0 sol_g_i: 0.0 d_i: 17.0 sol_taoi: 5.0 sol_deltai: 14.0 sol_deltai - sol_taoi: 9.0 sol_taoP: 5.0
30
            i: 2.0 1_i: 3.0 p_i: 1.0 aI_i: 5.0
            sol deltaP: 9.0 sol deltaP - sol taoP: 4.0 cl i: 2372796.0 sol c i: 2372796.0 sol gp i: 0.0 total work: 2372796.0 wasted work: 0.0
            i: 3.0 1_i: 3.0 p_i: -0.0 al_i: 29.0
                                                                                    sol a i: 29.0 sol g i: 0.0 d i: 34.0 sol taoi: 29.0 sol deltai: 33.0 sol deltai - sol taoi: 4.0 sol taoP
31
         29.0 sol_deltaP: 31.0 sol_deltaP - sol_taoP: 2.0 cI_i: 1054576.0 sol_e_i: 1054576.0 sol_gp_i: 0.0 total work: 1054576.0 wasted work: 0.0
            i: 4.0 1_i: 3.0 p_i: 8.0 al_i: 60.0
                                                                                sol_a_i: 60.0 sol_g_i: 0.0 d_i: 64.0 sol_taoi: 60.0 sol_deltai: 62.0 sol_deltai - sol_taoi: 2.0
32
                   sol_deltaP: 61.0 sol_deltaP - sol_taoP: 1.0 cl_i: 527288.0 sol_c_i: 527288.0 sol_gp_i: 0.0 total work: 659110.0 wasted work: 0.5 .0 l_i: 4.0 p_i: 12.0 al_i: 1.0 sol_a_i: 1.0 sol_g_i: 0.0 d_i: 11.0 sol_taoi: 1.0 sol_deltai: 10.0 sol_deltai: 9.0 sol_taoi: 9.0 sol_taoi: 1.0 sol_taoi: 9.0 sol_taoi: 9.0 sol_taoi: 1.0 sol_taoi: 9.0 sol_taoi: 9.0 sol_taoi: 1.0 sol_taoi: 9.0 sol_taoi: 
       60.0
33
            i: 5.0 1_i: 4.0 p_i: 12.0 aI_i: 1.0
               sol_deltaP: 3.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2372796.0 sol_c_i: 2372796.0 sol_gp_i: 0.0 total work: 2636440.0 wasted work: 1.0
       i: 6.0 l_i: 3.0 p_i: -0.0 al_i: 49.0 sol_a_i: 49.0 sol_g_i: 0.0 d_i: 55.0 sol_taoi: 49.0 sol_deltai: 55.0 sol_deltai - sol_taoi: 6.0 sol : 49.0 sol_deltaP: 52.0 sol_deltaP - sol_taoP: 3.0 cl_i: 1581864.0 sol_c_i: 1581864.0 sol_gp_i: 0.0 total work: 1581864.0 wasted work: 0.0
                                                                                                                                                                                        sol_deltai: 55.0 sol_deltai - sol_taoi: 6.0 sol_taoP
                                                                                  sol_a_i: 6.0 sol_g_i: 0.0 d_i: 18.0 sol_taoi: 6.0 sol_deltai: 15.0 sol_deltai - sol_taoi: 9.0 sol_taoP: 7.0
            i: 7.0 1_i: 5.0 p_i: 7.0 aI_i: 6.0
35
            sol_deltaP: 9.0 sol_deltaP - sol_taoP: 2.0 cI_i: 2372796.0 sol_c_i: 2372796.0 sol_gp_i: 0.0 total work: 2504618.0 wasted work: 0.5
            i: 8.0 1 i: 6.0 p i: -0.0 al i: 24.0 sol a i: 24.0 sol g i: 0.0 d i: 29.0 sol taoi: 24.0 sol deltai: 27.0 sol deltai - sol taoi: 3.0
                                                                                                                                                                                                                                                                 sol taoP
       : 24.0 sol_deltaP: 25.0 sol_deltaP - sol_taoP: 1.0 cl_i: 790932.0 sol_c_i: 790932.0 sol_gp_i: 0.0 total work: 790932.0
                                                                                                                                                                                                                                 wasted work: 0.0
                                                                                      sol_a_i: 6.0 sol_g_i: 0.0 d_i: 11.0 sol_taoi: 6.0 sol_deltai: 8.0 sol_deltai - sol_taoi: 2.0
37
            i: 9.0 1_i: 3.0 p_i: 20.0 aI_i: 6.0
              sol_deltaP: 7.0 sol_deltaP - sol_taoP: 1.0 cl_i: 527288.0 sol_c_i: 527288.0 sol_gp_i: 0.0 total work: 527288.0 wasted work: 0.0
           i: 10.0 l_i: 4.0 p_i: 16.0 al_i: 4.0
                                                                                          sol_a_i: 4.0 sol_g_i: 0.0 d_i: 14.0 sol_taoi: 4.0 sol_deltai: 13.0 sol_deltai - sol_taoi: 9.0
38
         4.0 sol_deltaP: 7.0 sol_deltaP - sol_taoP: 3.0 el_i: 2372796.0 sol_e_i: 2372796.0 sol_gp_i: 0.0 total work: 2372796.0 wasted work: 0.0
39
            sol_a_i: 37.0 sol_g_i: 0.0 d_i: 44.0 sol_taoi: 37.0 sol_deltai: 46.0 sol_deltai - sol_taoi: 9.0
                                                                                                                                                  sol_c_i: 2372796.0 sol_gp_i: 0.0 total work: 2372796.0 wasted work
       sol taoP: 37.0 sol deltaP: 39.0 sol deltaP - sol taoP: 2.0 cI i: 2372796.0
40
            i: 12.0 1_i: 5.0 p_i: 29.0 aI_i: 27.0
                                                                                          sol_a_i: 27.0 sol_g_i: 0.0 d_i: 32.0 sol_taoi: 27.0 sol_deltai: 29.0 sol_deltai - sol_taoi: 2.0
       sol_taoP: 27.0 sol_deltaP: 28.0 sol_deltaP - sol_taoP: 1.0 cl_i: 527288.0 sol_e_i: 527288.0 sol_gp_i: 0.0 total work: 527288.0 wasted work: 0.0
            i: 13.0 l_i: 6.0 p_i: 6.0 al_i: 41.0 sol_a_i: 41.0 sol_g_i: 0.0 d_i: 52.0 sol_taoi: 41.0 sol_deltai: 49.0 sol_deltai - sol_taoi: 8.0 sol_taoP
       : 41.0 sol_deltaP: 43.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2109152.0 sol_c_i: 2109152.0 sol_gp_i: 0.0 total work: 2240974.0 wasted work: 0.5 i: 14.0 l_i: 3.0 p_i: 12.0 al_i: 12.0 sol_a_i: 12.0 sol_g_i: 0.0 d_i: 21.0 sol_taoi: 12.0 sol_deltai - sol_taoi: 9.0
42
       sol taoP: 12.0 sol deltaP: 15.0 sol deltaP - sol taoP: 3.0 cl i: 2372796.0 sol c i: 2372796.0 sol gp i: 0.0 total work: 2504618.0 wasted work
       : 0.5
43
                                                                                          sol\_a\_i: 23.0 \quad sol\_g\_i: 0.0 \quad d\_i: 31.0 \quad sol\_taoi: 23.0 \quad sol\_deltai: 29.0 \quad sol\_deltai - sol\_taoi: 6.0
            i: 15.0    1_i: 3.0    p_i: 15.0    aI_i: 23.0
       sol_taoP: 23.0 sol_deltaP: 25.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1581864.0 sol_c_i: 1581864.0 sol_gp_i: 0.0 total work: 1845508.0 wasted work
            44
                                                                                          sol_a_i: 34.0 sol_g_i: 0.0 d_i: 40.0 sol_taoi: 34.0 sol_deltai: 41.0 sol_deltai - sol_taoi: 7.0
                                                                    sol_deltaP - sol_taoP: 2.0 cI_i: 1845508.0 sol_c_i: 1845508.0 sol_gp_i: 0.0 total work: 1845508.0 wasted work
       sol taoP: 34.0 sol deltaP: 36.0
                                                                                          sol\_a\_i: 30.0 \quad sol\_g\_i: 0.0 \quad d\_i: 36.0 \quad sol\_taoi: 30.0 \quad sol\_deltai: 32.0 \quad sol\_deltai - sol\_taoi: 2.0
45
           i: 17.0    1_i: 3.0    p_i: 15.0    aI_i: 30.0
       sol_taoP: 30.0 sol_deltaP: 31.0 sol_deltaP - sol_taoP: 1.0 cl_i: 527288.0 sol_c_i: 527288.0 sol_gp_i: 0.0 total work: 790932.0 wasted work: 1.0
            i: 18.0 1_i: 3.0 p_i: 3.0 aI_i: 50.0
                                                                                     sol_a_i: 50.0 sol_g_i: 0.0 d_i: 53.0 sol_taoi: 50.0 sol_deltai: 55.0 sol_deltai - sol_taoi: 5.0 sol_taoP
         50.0 sol_deltaP: 52.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1318220.0 sol_c_i: 1318220.0 sol_gp_i: 0.0 total work: 1713686.0 wasted work: 1.5
47
            i: 19.0    1_i: 3.0    p_i: 11.0    aI_i: 30.0
                                                                                          sol_a_i: 30.0 sol_g_i: 0.0 d_i: 36.0 sol_taoi: 30.0 sol_deltai: 32.0 sol_deltai - sol_taoi: 2.0
       sol_taoP: 30.0 sol_deltaP: 31.0 sol_deltaP - sol_taoP: 1.0 cI_i: 527288.0 sol_c_i: 527288.0 sol_gp_i: 0.0 total work: 527288.0
                                                                                                                                                                                                                                                  wasted work: 0.0
           i: 20.0 l_i: 3.0 p_i: 31.0 al_i: 30.0
                                                                                          sol_a_i: 30.0 sol_g_i: 0.0 d_i: 34.0 sol_taoi: 30.0 sol_deltai: 34.0 sol_deltai - sol_taoi: 4.0
       sol_taoP: 30.0 sol_deltaP: 32.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1054576.0 sol_e_i: 1054576.0 sol_gp_i: 0.0 total work: 1450042.0 wasted work
       : 1.5
49
            i: 21.0 1 i: 5.0 p i: 25.0 aI i: 10.0
                                                                                          sol\_a\_i: \ 10.0 \quad sol\_g\_i: \ 0.0 \quad d\_i: \ 15.0 \quad sol\_taoi: \ 10.0 \quad sol\_deltai: \ 12.0 \quad sol\_deltai - sol\_taoi: \ 2.0 \quad sol\_tao
      sol_taoP: 10.0 sol_deltaP: 11.0 sol_deltaP - sol_taoP: 1.0 cl_i: 527288.0 sol_e_i: 527288.0 sol_gp_i: 0.0 total work: 527288.0 wasted work: 0.0
           i: 22.0 1_i: 3.0 p_i: 23.0 al_i: 19.0 sol_a_i: 19.0 sol_g_i: 0.0 d_i: 28.0 sol_taoi: 19.0 sol_deltai: 27.0 sol_deltai - sol_taoi: 8.0
       sol_taoP: 19.0 sol_deltaP: 22.0 sol_deltaP - sol_taoP: 3.0 cl_i: 2109152.0 sol_c_i: 2109152.0 sol_gp_i: 0.0 total work: 2372796.0 wasted work
        1.0
```

- 51 i: 23.0 l_i: 3.0 p_i: 18.0 al_i: 19.0 sol_a_i: 19.0 sol_g_i: 0.0 d_i: 22.0 sol_taoi: 19.0 sol_deltai: 23.0 sol_deltai sol_taoi: 4.0 sol_taoP: 19.0 sol_deltaP sol_taoP: 2.0 cl_i: 1054576.0 sol_c_i: 1054576.0 sol_gp_i: 0.0 total work: 1054576.0 wasted work: 0.0

 52 i: 24.0 l_i: 3.0 p_i: -0.0 al_i: 63.0 sol_a_i: 63.0 sol_g_i: 0.0 d_i: 68.0 sol_taoi: 63.0 sol_deltai: 69.0 sol_deltai sol_taoi: 6.0
 - sol_taoP: 63.0 sol_deltaP: 66.0 sol_deltaP sol_taoP: 3.0 cl_i: 1581864.0 sol_c_i: 1581864.0 sol_gp_i: 0.0 total work: 1581864.0 wasted work : 0.0
 - 53 i: 25.0 l_i: 5.0 p_i: 15.0 al_i: 15.0 sol_a_i: 15.0 sol_g_i: 0.0 d_i: 20.0 sol_taoi: 15.0 sol_deltai: 17.0 sol_deltai: 17.0 sol_deltai: 17.0 sol_deltai: 17.0 sol_deltai: 20.0 sol_taoi: 25.0 sol_taoi: 15.0 sol_deltai: 17.0 sol_deltai: 20.0 sol_taoi: 25.0 sol_deltai: 25.0 sol_
 - sol_taoP: 43.0 sol_deltaP: 44.0 sol_deltaP sol_taoP: 1.0 cl_i: 527288.0 sol_c_i: 527288.0 sol_gp_i: 0.0 total work: 527288.0 wasted work: 0.0 55 i: 27.0 l_i: 5.0 p_i: 7.0 al_i: 1.0 sol_a_i: 1.0 sol_g_i: 0.0 d_i: 4.0 sol_taoi: 1.0 sol_deltai: 3.0 sol_deltai: 3.0 sol_deltai sol_taoi: 2.0 sol_taoP: 1. 0 sol_deltaP: 2.0 sol_deltaP sol_taoP: 1.0 cl_i: 527288.0 sol_c_i: 527288.0 sol_gp_i: 0.0 total work: 527288.0 wasted work: 0.0
 - 56 i: 28.0 l i: 4.0 p i: 26.0 al i: 45.0 sol a i: 45.0 sol g i: 0.0 d i: 51.0 sol taoi: 45.0 sol deltai: 50.0 sol deltai sol taoi: 5.0 sol taoi: 45.0 sol deltai sol taoi: 5.0 sol taoi: 45.0 sol deltai sol taoi: 5.0 sol deltai sol taoi: 5.0 sol deltai sol taoi: 5.0 sol deltai sol taoi: 45.0 sol deltai sol taoi: 5.0 sol d
 - 57 i: 29.0 l i: 4.0 p i: 18.0 al i: 60.0 sol a i: 60.0 sol g i: 0.0 d i: 66.0 sol taoi: 60.0 sol deltai: 63.0 sol deltai sol taoi: 3.0
 - sol_taoP: 60.0 sol_deltaP: 61.0 sol_deltaP sol_taoP: 1.0 cl_i: 790932.0 sol_c_i: 790932.0 sol_gp_i: 0.0 total work: 922754.0 wasted work: 0.5 i: 30.0 l_i: 4.0 p_i: 30.0 al_i: 46.0 sol_a_i: 46.0 sol_g_i: 0.0 d_i: 49.0 sol_taoi: 46.0 sol_deltai: 50.0 sol_deltai: 50.0 sol_deltai sol_taoi: 4.0 sol_taoP: 46.0 sol_deltaP sol_taoP: 1.0 cl_i: 1054576.0 sol_c_i: 1054576.0 sol_gp_i: 0.0 total work: 1054576.0 wasted work: 0.0
 - 59 i: 31.0 l_i: 5.0 p_i: 16.0 al_i: 0.0 sol_a_i: 0.0 sol_g_i: 0.0 d_i: 4.0 sol_taoi: 0.0 sol_deltai: 3.0 sol_deltai sol_taoi: 3.0 sol_taoP: 0.0 sol_deltaP: 1.0 sol_deltaP sol_taoP: 1.0 cl_i: 790932.0 sol_c_i: 790932.0 sol_gp_i: 0.0 total work: 1581864.0 wasted work: 3.0
 - 60 i: 32.0 l_i: 5.0 p_i: 18.0 al_i: 24.0 sol_a i: 24.0 sol_g i: 0.0 d_i: 35.0 sol_taoi: 24.0 sol_deltai: 33.0 sol_deltai: 33.0 sol_deltai: 33.0 sol_deltai: 33.0 sol_deltai: 30.0 sol_deltai: 30.
 - 61 i: 33.0 l_i: 4.0 p_i: 21.0 al_i: 6.0 sol_a_i: 8.714285714285714 sol_g_i: 0.5428571428571428 d_i: 14.0 sol_taoi: 9.0 sol_deltai: 16.0 sol_deltai sol_taoi: 7.0 sol_taoi: 9.0 sol_deltai sol_taoi: 3.0 cl_i: 1845508.0 sol_c_i: 2636440.0 sol_gp_i: 0.5 total work: 2636440.0 wasted work: 0.0
 - 2636440.0 wasted work: 0.0
 62 i: 34.0 l_i: 3.0 p_i: 26.0 al_i: 26.0 sol_a_i: 27.0 sol_g_i: 0.125 d_i: 35.0 sol_taoi: 27.0 sol_deltai: 29.0 sol_deltai sol_taoi: 2.0 sol_taoP: 27.0 sol_deltaP: 28.0 sol_deltaP sol_taoP: 1.0 cl_i: 527288.0 sol_c_i: 790932.0 sol_gp_i: 0.25 total work: 790932.0 wasted work: 0.0
 - 63 i: 35.0 l_i: 4.0 p_i: 30.0 al_i: 8.0 sol_a_i: 9.0 sol_g_i: 0.1 d_i: 13.0 sol_taoi: 9.0 sol_deltai: 11.0 sol_deltai: 11.0 sol_deltai: 11.0 sol_deltai: 2.0 sol_taoP: 9.0 sol_deltaP: 10.0 sol_deltaP sol_taoP: 1.0 cl_i: 527288.0 sol_c_i: 1318220.0 sol_gp_i: 0.75 total work: 1318220.0 wasted work: 0.0
 - 64 i: 36.0 l_i: 5.0 p_i: 3.0 al_i: 53.0 sol_a_i: 58.95833333333333 sol_g_i: 0.8511904761904754 d_i: 61.0 sol_taoi: 59.0 sol_deltai: 68.0 sol_deltai sol_taoi: 9.0 sol_taoi: 59.0 sol_deltai sol_taoi: 9.0 sol_taoi: 9.0 sol_deltai sol_taoi: 9.0 sol_deltai sol_taoi: 3559194.0 sol_gp_i: 0. 6428571428571429 total work: 3559194.0 wasted work: 0.0
 - 65 i: 37.0 l_i: 4.0 p_i: 11.0 al_i: 17.0 sol_a_i: 22.0 sol_g_i: 0.7142857142857143 d_i: 23.0 sol_taoi: 22.0 sol_deltai: 29.0 sol_deltai sol_taoi: 7.0 sol_taoi: 22.0 sol_deltai sol_taoi: 20.0 sol_taoi: 20.0 sol_deltai sol_taoi: 20.0 sol_taoi:
 - 66 i: 38.0 l_i: 6.0 p_i: 22.0 al_i: 55.0 sol_a_i: 61.0 sol_g_i: 1.0 d_i: 63.0 sol_taoi: 61.0 sol_deltai: 69.0 sol_deltai sol_taoi: 8.0 sol_taoP: 61.0 sol_deltaP sol_taoP: 2.0 cl_i: 2109152.0 sol_c_i: 2768262.0 sol_gp_i: 0.5 total work: 2768262.0 wasted work: 0.0

68 Time: 830.000000

69 70

71 72