```
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=10434
  3
        import sys; print('Python %s on %s' % (sys.version, sys.platform))
       sys.path.extend([F:\\\] ===\\\\3 python_code\\9 Code for this paper', 'E:/1 ===\\3 ===\\1 ===\\1 ===\\1 ===\\1 ===\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 ==\\1 =\\1 ==\\1 ==\\1 ==\\1 ==\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1 =\\1
  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 = 2471.0
                                                                     ub = 2471.0
                                                             MP_delete_Hua_Obj = 1306.0
23
                  MPObj = 2471.0
                                                                                                                              Hua = 1165.0
                                                                                                                                                                      SPObi = 1298.0
                                                                                                                                                                                                                 Deter SP Obj = 1165.0
24
25
       ub - 1b = 0.0
26
27
       Iteration cycle stopped by termination criterion 1: Because ub - lb \le eps, the iteration stop, and ent = 0
28
              i: 0.0 1_i: 3.0 p_i: 7.0 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: 7.0 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
                                                                                          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: 4.0 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: 11.0 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: -0.0 aI_i: 60.0
32
                                                                                                   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
           60.0 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: 527288.0 wasted work: 0.0 i: 5.0 l_i: 4.0 p_i: 10.0 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_taoP: 1
33
                  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: 2372796.0 wasted work: 0.0
          i: 6.0 1_i: 3.0 p_i: -0.0 aI_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: 55.0 sol_deltai: 55.0 sol_deltai: 55.0 sol_deltai: 50.0 sol_deltai: 55.0 so
                                                                                                                                                                                                                                                                                                            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
35
              i: 7.0 l_i: 5.0 p_i: 14.0 aI_i: 6.0
                  sol_deltaP: 9.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2372796.0 sol_c_i: 2372796.0 sol_gp_i: 0.0 total work: 2504618.0 wasted work: 0.5
                                                                                                 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
              i: 8.0 1_i: 6.0 p_i: -0.0 aI_i: 24.0
                                                                                                                                                                                                                                                                                                            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: 19.0 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
                                                                                                        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: 6.0 sol_deltaP - sol_taoP: 2.0 el_i: 2372796.0 sol_c_i: 2372796.0 sol_gp_i: 0.0 total work: 2636440.0 wasted work: 1.0
39
              aI_i: 37.0
                                                                                                        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 taoP: 37.0 sol deltaP: 39.0 sol deltaP - sol taoP: 2.0 cI i: 2372796.0
                                                                                                                                                                         sol_c_i: 2372796.0 sol_gp_i: 0.0 total work: 3427372.0 wasted work
40
              i: 12.0    1_i: 5.0    p_i: 14.0    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: 2768262.0 wasted work: 2.5 i: 14.0 l_i: 3.0 p_i: 28.0 al_i: 12.0 sol_a_i: 12.0 sol_g_i: 0.0 d_i: 21.0 sol_taoi: 12.0 sol_deltai: 21.0 sol_deltai: 21.0 sol_deltai: 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: 2372796.0 wasted work
        : 0.0
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: 19.0    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: 19.0    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: 1450042.0 wasted work: 0.5
47
              i: 19.0    1_i: 3.0    p_i: 14.0    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: 19.0 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: 31.0 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
```

unknown i: 23.0 l\_i: 3.0 p\_i: 22.0 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 s sol taoP: 19.0 sol deltaP: 21.0 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 i: 24.0 1\_i: 3.0 p\_i: -0.0 aI\_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 i: 25.0 1\_i: 5.0 p\_i: 19.0 aI\_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 - sol\_taoi: 2.0 sol\_taoP: 15.0 sol\_deltaP: 16.0 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 sol\_a\_i: 43.0 sol\_g\_i: 0.0 d\_i: 47.0 sol\_taoi: 43.0 sol\_deltai: 45.0 sol\_deltai - sol\_taoi: 2.0 i: 26.0 1 i: 3.0 p i: 12.0 aI i: 43.0 sol\_taoP: 43.0 sol\_deltaP: 44.0 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: 27.0 1\_i: 5.0 p\_i: -0.0 aI\_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 - sol\_taoi: 2.0 sol\_taoP: 1.0 sol deltaP: 2.0 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: 28.0 l\_i: 4.0 p\_i: 20.0 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\_taoP: 45.0 sol\_deltaP: 46.0 sol\_deltaP - sol\_taoP: 1.0 cl\_i: 1318220.0 sol\_c\_i: 1318220.0 sol\_gp\_i: 0.0 total work: 1318220.0 wasted work : 0.0 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 i: 29.0 1\_i: 4.0 p\_i: 13.0 al\_i: 60.0 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: 24.0 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 s sol taoP: 46.0 sol\_deltaP: 47.0 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  $sol\_a\_i: \ 0.0 \quad sol\_g\_i: \ 0.0 \quad d\_i: \ 4.0 \quad sol\_taoi: \ 0.0 \quad sol\_deltai: \ 3.0 \quad sol\_deltai - sol\_taoi: \ 3.0 \quad sol\_taoP: \ sol\_taoP$ i: 31.0 1\_i: 5.0 p\_i: 14.0 aI\_i: 0.0 0.0 sol\_deltaP: 1.0 sol\_deltaP - sol\_taoP: 1.0 cI\_i: 790932.0 sol\_e\_i: 790932.0 sol\_gp\_i: 0.0 total work: 1581864.0 wasted work: 3.0 i: 32.0 l\_i: 5.0 p\_i: 22.0 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 sol taoP: 25.0 sol deltaP: 27.0 sol deltaP - sol taoP: 2.0 cl i: 2372796.0 sol c i: 2372796.0 sol gp i: 0.0 total work: 2504618.0 wasted work : 0.5 i: 33.0 1\_i: 4.0 p\_i: -0.0 aI\_i: 6.0 sol\_a\_i: 6.714285714285714 sol\_g\_i: 0.14285714285 d\_i: 14.0 sol\_taoi: 7.0 sol\_deltai: 14. 0 sol deltai - sol taoi: 7.0 sol taoP: 7.0 sol deltaP: 10.0 sol deltaP - sol taoP: 3.0 cl i: 1845508.0 sol c i: 1845508.0 sol gp i: 0.0 total work : 1977330.0 wasted work: 0.5 sol\_a\_i: 26.0 sol\_g\_i: 0.0 d\_i: 35.0 sol\_taoi: 26.0 sol\_deltai: 28.0 sol\_deltai - sol\_taoi: 2.0 i: 34.0 1\_i: 3.0 p\_i: 11.0 aI\_i: 26.0 sol\_taoP: 26.0 sol\_deltaP: 27.0 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: 35.0 l\_i: 4.0 p\_i: 28.0 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 sol\_taoi: 2.0 sol\_taoP: 9.0 sol\_deltaP: 10.0 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: 36.0 l\_i: 5.0 p\_i: 17.0 al\_i: 53.0 sol\_a\_i: 54.0 sol\_g\_i: 0.14285714285714285 d\_i: 61.0 sol\_taoi: 54.0 sol\_deltai: 63.0 sol\_deltai sol\_taoi: 9.0 sol\_taoP: 54.0 sol\_deltaP: 57.0 sol\_deltaP - sol\_taoP: 3.0 cl\_i: 2372796.0 sol\_c\_i: 3427372.0 sol\_gp\_i: 0.5714285714285714 total work: 4218304.0 wasted work: 3.0 i: 37.0 1\_i: 4.0 p\_i: 11.0 aI\_i: 17.0 sol\_a\_i: 17.0 sol\_g\_i: 0.0 d\_i: 23.0 sol\_taoi: 17.0 sol\_deltai: 24.0 sol\_deltai - sol\_taoi: 7.0 sol\_taoP: 17.0 sol\_deltaP: 19.0 sol\_deltaP - sol\_taoP: 2.0 cl\_i: 1845508.0 sol\_c\_i: 1920834.857142857 sol\_gp\_i: 0.14285714285714285 total work: 2240974.0 wasted work: 1.2142857142857146 sol\_taoi: 8.0 sol\_taoP: 57.0 sol\_deltaP: 59.0 sol\_deltaP - sol\_taoP: 2.0 cl\_i: 2109152.0 sol\_c\_i: 2297469.1428571427 sol\_gp\_i: 0. 14285714285714285 total work: 3691016.0 wasted work: 5.2857142857142865 sol gp i: 0.14285714285714285 total work: 2768262.0 wasted work: 0.3571428571428569 Time: 587.000000 69 70 71 72