1 "E:\1 □□□□\3 □□□□□\1 □□□□□□\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=46192

2

3 import sys; print('Python %s on %s' % (sys.version, sys.platform))

4 sys.path.extend(['E:\\1 □□□□\\3 □□□□□\\1 □□□□□□\\1 □□□□□□□□\\1_□□□□□□_□□□□\\1_LW_□□□□\\4 □□□□\\3 python_code\\9 Code for this paper', 'E:/1 □□□□/3 □□□□□/1 □□□□□□/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_□□□□□□_□□□□/1_LW_□□□□/4 □□□□/3 python_code/9 Code for this paper/main_RO_CCG_ExtendedByMe.py', wdir='E:/1 □□□□/3 □□□□□/1 □□□□□□/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

13 Optimize the ./R_20_1.xlsx instance by ECCG

14

15 Master protblem status = 2 , is Optimal and MP obj = 832.0

16 The initial lb = -inf   ub = inf

17

18 The current iteration cnt = 0

19 The SP model was solved Optimal 2 and SPObj = 832.0

20 Deterministic Sub problem Status= 2 , is Optimal

21 Master protblem status = 2 , is Optimal

22 lb = 1580.0   ub = 1580.0

23 MPObj = 1580.0   MP_delete_Hua_Obj = 851.0   Hua = 729.0   SPObj = 832.0   Deter_SP_Obj = 729.0

24

25 ub - lb = 0.0

26

27 Iteration cycle stopped by termination criterion 1: Because ub - lb <= eps, the iteration stop, and cnt = 0

28 i: 0.0 l_i: 5.0 p_i: 6.0 al_i: 64.0   sol_a_i: 64.0 sol_g_i: 0.0 d_i: 75.0 sol_taoi: 64.0 sol_deltai: 75.0 sol_deltai - sol_taoi: 11.0 sol_taoP: 64.0 sol_deltaP: 67.0 sol_deltaP - sol_taoP: 3.0 cI_i: 2461678.0 sol_c_i: 2461678.0 sol_gp_i: 0.0 total work: 2636440.0 wasted work: 0.6628711444220237

29 i: 1.0 l_i: 6.0 p_i: 28.0 al_i: 12.0   sol_a_i: 12.0 sol_g_i: 0.0 d_i: 20.0 sol_taoi: 19.0 sol_deltai: 28.0 sol_deltai - sol_taoi: 9.0 sol_taoP: 19.0 sol_deltaP: 21.0 sol_deltaP - sol_taoP: 2.0 cI_i: 1987031.0 sol_c_i: 1987031.0 sol_gp_i: 0.0 total work: 2240974.0 wasted work: 0.9632041692585456

30 i: 2.0 l_i: 6.0 p_i: 22.0 al_i: 63.0   sol_a_i: 63.0 sol_g_i: 0.0 d_i: 76.0 sol_taoi: 63.0 sol_deltai: 73.0 sol_deltai - sol_taoi: 10.0 sol_taoP: 63.0 sol_deltaP: 65.0 sol_deltaP - sol_taoP: 2.0 cI_i: 2239066.0 sol_c_i: 2239066.0 sol_gp_i: 0.0 total work: 2504618.0 wasted work: 1.0072370317549422

31 i: 3.0 l_i: 5.0 p_i: 0.0 al_i: 67.0   sol_a_i: 67.0 sol_g_i: 0.0 d_i: 78.0 sol_taoi: 67.0 sol_deltai: 78.0 sol_deltai - sol_taoi: 11.0 sol_taoP: 67.0 sol_deltaP: 72.0 sol_deltaP - sol_taoP: 5.0 cI_i: 2634265.0 sol_c_i: 2634265.0 sol_gp_i: 0.0 total work: 2636440.0 wasted work: 0.008249761041404319

32 i: 4.0 l_i: 6.0 p_i: 16.0 al_i: 58.0   sol_a_i: 58.0 sol_g_i: 0.0 d_i: 66.0 sol_taoi: 58.0 sol_deltai: 65.0 sol_deltai - sol_taoi: 7.0 sol_taoP: 58.0 sol_deltaP: 59.0 sol_deltaP - sol_taoP: 1.0 cI_i: 1408749.0 sol_c_i: 1408749.0 sol_gp_i: 0.0 total work: 1581864.0 wasted work: 0.6566240839920499

33 i: 5.0 l_i: 7.0 p_i: 27.0 al_i: 8.0   sol_a_i: 8.0 sol_g_i: 0.0 d_i: 19.0 sol_taoi: 8.0 sol_deltai: 18.0 sol_deltai - sol_taoi: 10.0 sol_taoP: 8.0 sol_deltaP: 11.0 sol_deltaP - sol_taoP: 3.0 cI_i: 2138353.0 sol_c_i: 2138353.0 sol_gp_i: 0.0 total work: 2372796.0 wasted work: 0.88924079440457558

34 i: 6.0 l_i: 5.0 p_i: 5.0 al_i: 33.0   sol_a_i: 33.0 sol_g_i: 0.0 d_i: 42.0 sol_taoi: 33.0 sol_deltai: 40.0 sol_deltai - sol_taoi: 7.0 sol_taoP: 33.0 sol_deltaP: 35.0 sol_deltaP - sol_taoP: 2.0 cI_i: 1416678.0 sol_c_i: 1416678.0 sol_gp_i: 0.0 total work: 1581864.0 wasted work: 0.6265494378783512

35 i: 7.0 l_i: 6.0 p_i: 0.0 al_i: 59.0   sol_a_i: 59.0 sol_g_i: 0.0 d_i: 62.0 sol_taoi: 59.0 sol_deltai: 65.0 sol_deltai - sol_taoi: 6.0 sol_taoP: 59.0 sol_deltaP: 62.0 sol_deltaP - sol_taoP: 3.0 cI_i: 1124285.0 sol_c_i: 1124285.0 sol_gp_i: 0.0 total work: 1581864.0 wasted work: 1.735594210374596

36 i: 8.0 l_i: 5.0 p_i: 0.0 al_i: 0.0   sol_a_i: 0.0 sol_g_i: 0.0 d_i: 6.0 sol_taoi: 0.0 sol_deltai: 9.0 sol_deltai - sol_taoi: 9.0 sol_taoP: 0.0 sol_deltaP: 2.0 sol_deltaP - sol_taoP: 2.0 cI_i: 2096347.0 sol_c_i: 2096347.0 sol_gp_i: 0.0 total work: 2109152.0 wasted work: 0.04856928282077347

37 i: 9.0 l_i: 5.0 p_i: 0.0 al_i: 47.0   sol_a_i: 47.0 sol_g_i: 0.0 d_i: 60.0 sol_taoi: 47.0 sol_deltai: 57.0 sol_deltai - sol_taoi: 10.0 sol_taoP: 47.0 sol_deltaP: 50.0 sol_deltaP - sol_taoP: 3.0 cI_i: 2232920.0 sol_c_i: 2232920.0 sol_gp_i: 0.0 total work: 3163728.0 wasted work: 3.530548770311481

38 i: 10.0 l_i: 5.0 p_i: 0.0 al_i: 36.0   sol_a_i: 36.0 sol_g_i: 0.0 d_i: 45.0 sol_taoi: 36.0 sol_deltai: 42.0 sol_deltai - sol_taoi: 6.0 sol_taoP: 36.0 sol_deltaP: 38.0 sol_deltaP - sol_taoP: 2.0 cI_i: 1093581.0 sol_c_i: 1093581.0 sol_gp_i: 0.0 total work: 1318220.0 wasted work: 0.8520542853241493

39 i: 11.0 l_i: 5.0 p_i: 11.0 al_i: 57.0   sol_a_i: 57.0 sol_g_i: 0.0 d_i: 64.0 sol_taoi: 57.0 sol_deltai: 65.0 sol_deltai - sol_taoi: 8.0 sol_taoP: 57.0 sol_deltaP: 59.0 sol_deltaP - sol_taoP: 2.0 cI_i: 1604130.0 sol_c_i: 1604130.0 sol_gp_i: 0.0 total work: 1845508.0 wasted work: 0.9155452048975133

40 i: 12.0 l_i: 6.0 p_i: 21.0 al_i: 8.0   sol_a_i: 8.0 sol_g_i: 0.0 d_i: 19.0 sol_taoi: 8.0 sol_deltai: 19.0 sol_deltai - sol_taoi: 11.0 sol_taoP: 8.0 sol_deltaP: 12.0 sol_deltaP - sol_taoP: 4.0 cI_i: 2533621.0 sol_c_i: 2533621.0 sol_gp_i: 0.0 total work: 2900084.0 wasted work: 1.3899918071338624

41 i: 13.0 l_i: 6.0 p_i: 22.0 al_i: 49.0   sol_a_i: 52.69047619047619 sol_g_i: 0.7380952380952381 d_i: 69.0 sol_taoi: 53.0 sol_deltai: 61.0 sol_deltai - sol_taoi: 8.0 sol_taoP: 53.0 sol_deltaP: 57.0 sol_deltaP - sol_taoP: 4.0 cI_i: 1644208.0 sol_c_i: 1845508.0 sol_gp_i: 0.19088240202697576 total work: 2109152.0 wasted work: 1.0

42 i: 14.0 l_i: 5.0 p_i: 16.0 al_i: 3.0   sol_a_i: 3.0 sol_g_i: 0.0 d_i: 25.0 sol_taoi: 3.0 sol_deltai: 11.0 sol_deltai - sol_taoi: 8.0 sol_taoP: 3.0 sol_deltaP: 6.0 sol_deltaP - sol_taoP: 3.0 cI_i: 1741922.0 sol_c_i: 2941455.65 sol_gp_i: 0.64997476592678 total work: 3691016.0 wasted work: 2.843077597062706

43 i: 15.0 l_i: 7.0 p_i: 7.0 al_i: 5.0   sol_a_i: 11.0 sol_g_i: 0.6 d_i: 28.0 sol_taoi: 11.0 sol_deltai: 25.0 sol_deltai - sol_taoi: 14.0 sol_taoP: 11.0 sol_deltaP: 14.0 sol_deltaP - sol_taoP: 3.0 cI_i: 3309707.0 sol_c_i: 3691016.0 sol_gp_i: 0.723151294928009 total work: 3822838.0 wasted work: 0.5

44 i: 16.0 l_i: 6.0 p_i: 0.0 al_i: 9.0   sol_a_i: 12.0 sol_g_i: 0.42857142857142855 d_i: 29.0 sol_taoi: 12.0 sol_deltai: 20.0 sol_deltai - sol_taoi: 8.0 sol_taoP: 12.0 sol_deltaP: 14.0 sol_deltaP - sol_taoP: 2.0 cI_i: 1828571.0 sol_c_i: 2109152.0 sol_gp_i: 0.21284838646053011 total work: 2109152.0 wasted work: 0.0

45 i: 17.0 l_i: 6.0 p_i: 21.0 al_i: 13.0   sol_a_i: 20.0 sol_g_i: 1.0 d_i: 33.0 sol_taoi: 20.0 sol_deltai: 26.0 sol_deltai - sol_taoi: 6.0

45 sol_taoP: 20.0   sol_deltaP: 24.0   sol_deltaP - sol_taoP: 4.0 cl_i: 1088452.0   sol_c_i: 3163728.0   sol_gp_i: 0.9839385686759418   total work: 3163728.0   wasted work: 0.0

46   i: 18.0   l_i: 5.0   p_i: 16.0   al_i: 9.0   sol_a_i: 14.0 sol_g_i: 0.8333333333333334 d_i: 27.0   sol_taoi: 14.0   sol_deltai: 24.0 sol_deltai - sol_taoi: 10.0 sol_taoP: 14.0   sol_deltaP: 16.0   sol_deltaP - sol_taoP: 2.0 cl_i: 2211540.0   sol_c_i: 3163728.0   sol_gp_i: 0.7223285946200179 total work: 3163728.0   wasted work: 0.0

47   i: 19.0   l_i: 5.0   p_i: 9.0 al_i: 39.0   sol_a_i: 42.6 sol_g_i: 0.4   d_i: 62.0   sol_taoi: 43.0   sol_deltai: 50.0 sol_deltai - sol_taoi: 7.0 sol_taoP: 43.0   sol_deltaP: 45.0   sol_deltaP - sol_taoP: 2.0 cl_i: 1546270.0   sol_c_i: 2636440.0   sol_gp_i: 0.5168759766958474   total work: 2636440.0   wasted work: 0.0

48 Time: 224.000000

49

50

51

52