--------------------------------------------------------------------------------

Setup the parameters...

number of variables : 25

number of objectives : 2

reference point : [0, 0]

interval of #weights : [(100, 100), (500, 500), (1000, 1000), (1500, 1500), (2000, 2000), (5000, 5000), (10000, 10000)]

solver MIP invoked : Gurobi.Optimizer

number of trials : 20

Generate an mo01UKP instance...

Compute S, the set of nondominated points...

|S| = 20 (2.94s)

Compute H, the hypervolume measure...

H(S) = 853675.0

Compute H̃, the estimation of H...

H estimated with rp=[0, 0] and 100 weight: 830126.2 (0.68s)

H estimated with rp=[0, 0] and 100 weight: 850349.1 (0.11s)

H estimated with rp=[0, 0] and 100 weight: 885794.1 (0.11s)

H estimated with rp=[0, 0] and 100 weight: 848111.4 (0.11s)

H estimated with rp=[0, 0] and 100 weight: 843954.8 (0.1s)

H estimated with rp=[0, 0] and 100 weight: 866461.0 (0.11s)

H estimated with rp=[0, 0] and 100 weight: 897565.7 (0.18s)

H estimated with rp=[0, 0] and 100 weight: 874835.7 (0.11s)

H estimated with rp=[0, 0] and 100 weight: 862060.2 (0.11s)

H estimated with rp=[0, 0] and 100 weight: 801705.9 (0.09s)

H estimated with rp=[0, 0] and 100 weight: 890562.1 (0.11s)

H estimated with rp=[0, 0] and 100 weight: 855322.7 (0.1s)

H estimated with rp=[0, 0] and 100 weight: 845870.0 (0.11s)

H estimated with rp=[0, 0] and 100 weight: 871902.7 (0.1s)

H estimated with rp=[0, 0] and 100 weight: 803888.6 (0.09s)

H estimated with rp=[0, 0] and 100 weight: 849069.8 (0.12s)

H estimated with rp=[0, 0] and 100 weight: 868606.2 (0.1s)

H estimated with rp=[0, 0] and 100 weight: 844612.4 (0.1s)

H estimated with rp=[0, 0] and 100 weight: 848287.5 (0.11s)

H estimated with rp=[0, 0] and 100 weight: 862746.7 (0.12s)

Analyze the results...

value H(S) = 853675.0

average value H̃ = 855091.6

average absolue error H̃ = 18494.1

average relative error H̃ = 0.021664

Compute H̃, the estimation of H...

H estimated with rp=[0, 0] and 500 weight: 856243.4 (0.53s)

H estimated with rp=[0, 0] and 500 weight: 860657.1 (0.52s)

H estimated with rp=[0, 0] and 500 weight: 848034.8 (0.52s)

H estimated with rp=[0, 0] and 500 weight: 850017.9 (0.5s)

H estimated with rp=[0, 0] and 500 weight: 856967.8 (0.53s)

H estimated with rp=[0, 0] and 500 weight: 856185.8 (0.52s)

H estimated with rp=[0, 0] and 500 weight: 856717.8 (0.5s)

H estimated with rp=[0, 0] and 500 weight: 859262.1 (0.51s)

H estimated with rp=[0, 0] and 500 weight: 846133.4 (0.51s)

H estimated with rp=[0, 0] and 500 weight: 841821.1 (0.54s)

H estimated with rp=[0, 0] and 500 weight: 871256.8 (0.66s)

H estimated with rp=[0, 0] and 500 weight: 847129.2 (0.5s)

H estimated with rp=[0, 0] and 500 weight: 846070.2 (0.52s)

H estimated with rp=[0, 0] and 500 weight: 847935.4 (0.51s)

H estimated with rp=[0, 0] and 500 weight: 865130.7 (0.52s)

H estimated with rp=[0, 0] and 500 weight: 857753.5 (0.5s)

H estimated with rp=[0, 0] and 500 weight: 857148.6 (0.51s)

H estimated with rp=[0, 0] and 500 weight: 847393.0 (0.5s)

H estimated with rp=[0, 0] and 500 weight: 856279.9 (0.51s)

H estimated with rp=[0, 0] and 500 weight: 844932.8 (0.5s)

Analyze the results...

value H(S) = 853675.0

average value H̃ = 853653.6

average absolue error H̃ = 6339.3

average relative error H̃ = 0.007426

Compute H̃, the estimation of H...

H estimated with rp=[0, 0] and 1000 weight: 851937.8 (0.98s)

H estimated with rp=[0, 0] and 1000 weight: 842315.1 (1.01s)

H estimated with rp=[0, 0] and 1000 weight: 850742.2 (1.02s)

H estimated with rp=[0, 0] and 1000 weight: 862065.6 (1.01s)

H estimated with rp=[0, 0] and 1000 weight: 874303.1 (0.99s)

H estimated with rp=[0, 0] and 1000 weight: 865108.4 (1.03s)

H estimated with rp=[0, 0] and 1000 weight: 839609.9 (1.01s)

H estimated with rp=[0, 0] and 1000 weight: 865207.9 (1.02s)

H estimated with rp=[0, 0] and 1000 weight: 849765.0 (1.03s)

H estimated with rp=[0, 0] and 1000 weight: 845845.0 (1.04s)

H estimated with rp=[0, 0] and 1000 weight: 857701.4 (1.03s)

H estimated with rp=[0, 0] and 1000 weight: 857787.5 (0.99s)

H estimated with rp=[0, 0] and 1000 weight: 840433.7 (1.02s)

H estimated with rp=[0, 0] and 1000 weight: 857289.4 (1.03s)

H estimated with rp=[0, 0] and 1000 weight: 851021.6 (1.02s)

H estimated with rp=[0, 0] and 1000 weight: 852173.3 (1.02s)

H estimated with rp=[0, 0] and 1000 weight: 859722.6 (1.08s)

H estimated with rp=[0, 0] and 1000 weight: 862433.6 (1.06s)

H estimated with rp=[0, 0] and 1000 weight: 859556.1 (1.04s)

H estimated with rp=[0, 0] and 1000 weight: 853992.0 (1.04s)

Analyze the results...

value H(S) = 853675.0

average value H̃ = 854950.6

average absolue error H̃ = 7198.7

average relative error H̃ = 0.008433

Compute H̃, the estimation of H...

H estimated with rp=[0, 0] and 1500 weight: 849881.0 (1.56s)

H estimated with rp=[0, 0] and 1500 weight: 846500.8 (1.58s)

H estimated with rp=[0, 0] and 1500 weight: 863721.0 (1.61s)

H estimated with rp=[0, 0] and 1500 weight: 842219.2 (1.51s)

H estimated with rp=[0, 0] and 1500 weight: 856863.9 (1.53s)

H estimated with rp=[0, 0] and 1500 weight: 851303.6 (1.57s)

H estimated with rp=[0, 0] and 1500 weight: 861701.4 (1.61s)

H estimated with rp=[0, 0] and 1500 weight: 858707.7 (1.62s)

H estimated with rp=[0, 0] and 1500 weight: 846497.8 (1.56s)

H estimated with rp=[0, 0] and 1500 weight: 858817.3 (1.58s)

H estimated with rp=[0, 0] and 1500 weight: 844536.1 (1.63s)

H estimated with rp=[0, 0] and 1500 weight: 863627.7 (1.64s)

H estimated with rp=[0, 0] and 1500 weight: 859933.1 (1.63s)

H estimated with rp=[0, 0] and 1500 weight: 858941.7 (1.54s)

H estimated with rp=[0, 0] and 1500 weight: 842777.7 (1.61s)

H estimated with rp=[0, 0] and 1500 weight: 857302.2 (1.61s)

H estimated with rp=[0, 0] and 1500 weight: 845805.0 (1.6s)

H estimated with rp=[0, 0] and 1500 weight: 851659.4 (1.6s)

H estimated with rp=[0, 0] and 1500 weight: 849626.2 (1.58s)

H estimated with rp=[0, 0] and 1500 weight: 862452.5 (1.66s)

Analyze the results...

value H(S) = 853675.0

average value H̃ = 853643.8

average absolue error H̃ = 6563.1

average relative error H̃ = 0.007688

Compute H̃, the estimation of H...

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0] and 2000 weight: 861439.2 (2.17s)

H estimated with rp=[0, 0] and 2000 weight: 860346.0 (2.12s)

H estimated with rp=[0, 0] and 2000 weight: 851677.1 (2.16s)

H estimated with rp=[0, 0] and 2000 weight: 849654.3 (2.27s)

H estimated with rp=[0, 0] and 2000 weight: 861166.1 (2.11s)

H estimated with rp=[0, 0] and 2000 weight: 863016.2 (2.18s)

H estimated with rp=[0, 0] and 2000 weight: 844218.9 (2.22s)

H estimated with rp=[0, 0] and 2000 weight: 850544.0 (2.14s)

H estimated with rp=[0, 0] and 2000 weight: 847491.5 (2.22s)

H estimated with rp=[0, 0] and 2000 weight: 861729.9 (2.27s)

H estimated with rp=[0, 0] and 2000 weight: 852722.6 (2.25s)

H estimated with rp=[0, 0] and 2000 weight: 860920.5 (2.24s)

H estimated with rp=[0, 0] and 2000 weight: 859876.2 (2.26s)

H estimated with rp=[0, 0] and 2000 weight: 852301.4 (2.21s)

H estimated with rp=[0, 0] and 2000 weight: 844176.3 (2.26s)

H estimated with rp=[0, 0] and 2000 weight: 855335.5 (2.34s)

H estimated with rp=[0, 0] and 2000 weight: 848631.7 (2.24s)

H estimated with rp=[0, 0] and 2000 weight: 858013.9 (2.27s)

H estimated with rp=[0, 0] and 2000 weight: 853028.3 (2.32s)

H estimated with rp=[0, 0] and 2000 weight: 855027.3 (2.31s)

Analyze the results...

value H(S) = 853675.0

average value H̃ = 854565.8

average absolue error H̃ = 5121.2

average relative error H̃ = 0.005999

Compute H̃, the estimation of H...

H estimated with rp=[0, 0] and 5000 weight: 846580.8 (5.73s)

H estimated with rp=[0, 0] and 5000 weight: 857291.9 (5.83s)

H estimated with rp=[0, 0] and 5000 weight: 855528.8 (6.0s)

H estimated with rp=[0, 0] and 5000 weight: 855846.4 (6.41s)

H estimated with rp=[0, 0] and 5000 weight: 857741.2 (6.41s)

H estimated with rp=[0, 0] and 5000 weight: 853401.5 (6.47s)

H estimated with rp=[0, 0] and 5000 weight: 847860.1 (6.51s)

H estimated with rp=[0, 0] and 5000 weight: 854231.3 (6.58s)

H estimated with rp=[0, 0] and 5000 weight: 853405.4 (6.37s)

H estimated with rp=[0, 0] and 5000 weight: 854747.3 (6.6s)

H estimated with rp=[0, 0] and 5000 weight: 853201.1 (6.76s)

H estimated with rp=[0, 0] and 5000 weight: 851769.8 (6.76s)

H estimated with rp=[0, 0] and 5000 weight: 849699.7 (6.9s)

H estimated with rp=[0, 0] and 5000 weight: 851626.1 (6.96s)

H estimated with rp=[0, 0] and 5000 weight: 850166.3 (6.99s)

H estimated with rp=[0, 0] and 5000 weight: 861470.2 (7.06s)

H estimated with rp=[0, 0] and 5000 weight: 854739.6 (7.36s)

H estimated with rp=[0, 0] and 5000 weight: 855031.9 (7.37s)

H estimated with rp=[0, 0] and 5000 weight: 851278.9 (6.9s)

H estimated with rp=[0, 0] and 5000 weight: 857132.3 (6.51s)

Analyze the results...

value H(S) = 853675.0

average value H̃ = 853637.5

average absolue error H̃ = 2738.6

average relative error H̃ = 0.003208

Compute H̃, the estimation of H...

H estimated with rp=[0, 0] and 10000 weight: 856428.6 (13.13s)

H estimated with rp=[0, 0] and 10000 weight: 855293.6 (13.54s)

H estimated with rp=[0, 0] and 10000 weight: 855185.8 (13.9s)

H estimated with rp=[0, 0] and 10000 weight: 847336.2 (13.25s)

H estimated with rp=[0, 0] and 10000 weight: 851459.9 (13.12s)

H estimated with rp=[0, 0] and 10000 weight: 848183.4 (13.48s)

H estimated with rp=[0, 0] and 10000 weight: 854242.5 (13.72s)

H estimated with rp=[0, 0] and 10000 weight: 856452.0 (14.0s)

H estimated with rp=[0, 0] and 10000 weight: 850164.8 (14.26s)

H estimated with rp=[0, 0] and 10000 weight: 853851.1 (14.24s)

H estimated with rp=[0, 0] and 10000 weight: 857948.0 (14.23s)

H estimated with rp=[0, 0] and 10000 weight: 853278.4 (14.49s)

H estimated with rp=[0, 0] and 10000 weight: 852385.6 (14.73s)

H estimated with rp=[0, 0] and 10000 weight: 855520.4 (14.72s)

H estimated with rp=[0, 0] and 10000 weight: 850695.3 (14.92s)

H estimated with rp=[0, 0] and 10000 weight: 854138.3 (15.06s)

H estimated with rp=[0, 0] and 10000 weight: 848756.5 (14.83s)

H estimated with rp=[0, 0] and 10000 weight: 854663.4 (15.1s)

H estimated with rp=[0, 0] and 10000 weight: 853001.6 (14.92s)

H estimated with rp=[0, 0] and 10000 weight: 855130.6 (14.72s)

Analyze the results...

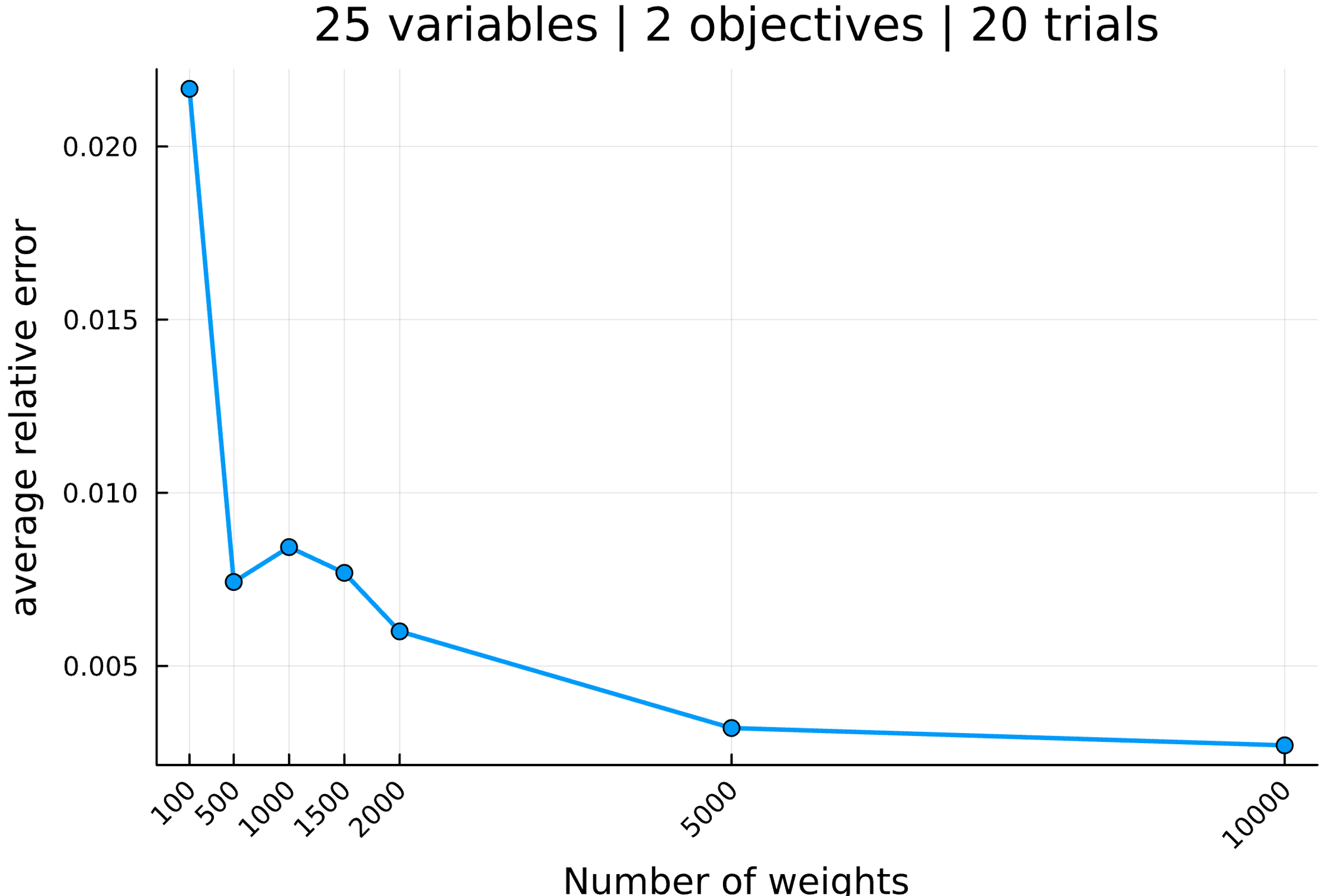
value H(S) = 853675.0

average value H̃ = 853205.8

average absolue error H̃ = 2312.1

average relative error H̃ = 0.002708

All average relative error H̃ = [0.021664074303893072, 0.007425856990029041, 0.00843259086761593, 0.007688046592547422, 0.005999059177578836, 0.0032079831358658465, 0.002708450161282252]



--------------------------------------------------------------------------------

Setup the parameters...

number of variables : 25

number of objectives : 3

reference point : [0, 0, 0]

interval of #weights : [(100, 100), (500, 500), (1000, 1000), (1500, 1500), (2000, 2000), (5000, 5000), (10000, 10000)]

solver MIP invoked : Gurobi.Optimizer

number of trials : 20

Generate an mo01UKP instance...

Compute S, the set of nondominated points...

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

|S| = 26 (0.29s)

Compute H, the hypervolume measure...

H(S) = 1172026699.0

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0] and 100 weight: 1161576847.9 (0.32s)

H estimated with rp=[0, 0, 0] and 100 weight: 1174510286.9 (0.14s)

H estimated with rp=[0, 0, 0] and 100 weight: 1206859625.3 (0.14s)

H estimated with rp=[0, 0, 0] and 100 weight: 1233358342.7 (0.15s)

H estimated with rp=[0, 0, 0] and 100 weight: 1125286152.9 (0.15s)

H estimated with rp=[0, 0, 0] and 100 weight: 1178902278.2 (0.15s)

H estimated with rp=[0, 0, 0] and 100 weight: 1143181176.8 (0.14s)

H estimated with rp=[0, 0, 0] and 100 weight: 1113772051.8 (0.15s)

H estimated with rp=[0, 0, 0] and 100 weight: 1150421194.6 (0.17s)

H estimated with rp=[0, 0, 0] and 100 weight: 1172386777.1 (0.16s)

H estimated with rp=[0, 0, 0] and 100 weight: 1215380717.2 (0.18s)

H estimated with rp=[0, 0, 0] and 100 weight: 1131487317.0 (0.19s)

H estimated with rp=[0, 0, 0] and 100 weight: 1203199240.3 (0.17s)

H estimated with rp=[0, 0, 0] and 100 weight: 1138736451.4 (0.17s)

H estimated with rp=[0, 0, 0] and 100 weight: 1217445232.5 (0.17s)

H estimated with rp=[0, 0, 0] and 100 weight: 1212508956.8 (0.17s)

H estimated with rp=[0, 0, 0] and 100 weight: 1176328470.5 (0.16s)

H estimated with rp=[0, 0, 0] and 100 weight: 1190065454.1 (0.16s)

H estimated with rp=[0, 0, 0] and 100 weight: 1173960532.3 (0.16s)

H estimated with rp=[0, 0, 0] and 100 weight: 1170612932.8 (0.17s)

Analyze the results...

value H(S) = 1172026699.0

average value H̃ = 1174499002.0

average absolue error H̃ = 26586249.6

average relative error H̃ = 0.022684

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0] and 500 weight: 1131105108.3 (0.77s)

H estimated with rp=[0, 0, 0] and 500 weight: 1199120128.5 (0.78s)

H estimated with rp=[0, 0, 0] and 500 weight: 1182210630.9 (0.76s)

H estimated with rp=[0, 0, 0] and 500 weight: 1184249614.7 (0.81s)

H estimated with rp=[0, 0, 0] and 500 weight: 1161563773.7 (0.75s)

H estimated with rp=[0, 0, 0] and 500 weight: 1163812892.0 (0.78s)

H estimated with rp=[0, 0, 0] and 500 weight: 1168142299.1 (0.78s)

H estimated with rp=[0, 0, 0] and 500 weight: 1166531923.2 (0.79s)

H estimated with rp=[0, 0, 0] and 500 weight: 1198605979.7 (0.81s)

H estimated with rp=[0, 0, 0] and 500 weight: 1178099816.1 (0.84s)

H estimated with rp=[0, 0, 0] and 500 weight: 1191504899.9 (0.78s)

H estimated with rp=[0, 0, 0] and 500 weight: 1148459203.4 (0.76s)

H estimated with rp=[0, 0, 0] and 500 weight: 1168420114.2 (0.75s)

H estimated with rp=[0, 0, 0] and 500 weight: 1164380735.7 (0.74s)

H estimated with rp=[0, 0, 0] and 500 weight: 1197754151.5 (0.7s)

H estimated with rp=[0, 0, 0] and 500 weight: 1171841829.2 (0.8s)

H estimated with rp=[0, 0, 0] and 500 weight: 1182696217.6 (0.76s)

H estimated with rp=[0, 0, 0] and 500 weight: 1199123126.4 (0.8s)

H estimated with rp=[0, 0, 0] and 500 weight: 1182515064.4 (0.79s)

H estimated with rp=[0, 0, 0] and 500 weight: 1203046878.2 (0.74s)

Analyze the results...

value H(S) = 1172026699.0

average value H̃ = 1177159219.3

average absolue error H̃ = 15530761.6

average relative error H̃ = 0.013251

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0] and 1000 weight: 1173545907.5 (1.46s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1166894860.2 (1.49s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1161809368.9 (1.55s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1165435864.1 (1.59s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1157090545.2 (1.52s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1155698473.8 (1.47s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1149024248.7 (1.5s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1173686677.0 (1.54s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1166777389.3 (1.57s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1158097266.3 (1.54s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1185519827.5 (1.45s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1188042338.7 (1.58s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1172506567.2 (1.58s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1178982061.6 (1.42s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1163178217.6 (1.31s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1180226496.6 (1.51s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1155319877.6 (1.74s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1165306136.7 (1.38s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1168393483.9 (1.3s)

H estimated with rp=[0, 0, 0] and 1000 weight: 1167147020.2 (1.47s)

Analyze the results...

value H(S) = 1172026699.0

average value H̃ = 1167634131.4

average absolue error H̃ = 9224865.9

average relative error H̃ = 0.007871

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0] and 1500 weight: 1168754891.7 (2.43s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1179977331.8 (1.9s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1175613916.0 (1.97s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1175232052.5 (2.46s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1170075556.5 (2.1s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1176324938.7 (2.15s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1178674158.2 (2.44s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1164399310.7 (2.14s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1166135630.4 (2.19s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1167952227.4 (2.4s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1182109984.8 (2.07s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1174528902.4 (2.36s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1166357613.7 (2.18s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1186382753.6 (2.09s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1163294577.0 (2.39s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1165355820.3 (2.15s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1146394679.2 (2.08s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1167725599.3 (2.53s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1163356967.0 (2.08s)

H estimated with rp=[0, 0, 0] and 1500 weight: 1172817186.1 (2.11s)

Analyze the results...

value H(S) = 1172026699.0

average value H̃ = 1170573204.9

average absolue error H̃ = 6795587.4

average relative error H̃ = 0.005798

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0] and 2000 weight: 1178550299.4 (3.1s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1169875687.6 (2.74s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1174743429.6 (3.27s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1157369531.0 (2.74s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1175950670.5 (3.22s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1161921969.5 (2.76s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1170958225.8 (3.28s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1158850826.8 (2.79s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1184448642.5 (3.2s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1176756651.6 (2.78s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1175984174.9 (3.46s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1180716366.7 (3.27s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1172069101.1 (3.42s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1179688517.3 (3.17s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1183046967.1 (3.02s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1180062253.8 (3.05s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1170683609.4 (3.27s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1175110612.3 (3.47s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1178703696.9 (2.92s)

H estimated with rp=[0, 0, 0] and 2000 weight: 1159349999.8 (3.19s)

Analyze the results...

value H(S) = 1172026699.0

average value H̃ = 1173242061.7

average absolue error H̃ = 6733067.0

average relative error H̃ = 0.005745

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0] and 5000 weight: 1166791961.4 (7.19s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1157627267.6 (6.87s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1167772398.6 (7.18s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1176142381.0 (7.08s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1160789403.3 (7.02s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1171726878.0 (6.92s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1166383814.9 (6.85s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1177312764.5 (6.82s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1172018753.4 (6.75s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1174698502.2 (6.92s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1171883220.3 (6.67s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1172319902.6 (6.81s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1178922215.1 (6.86s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1168463139.1 (6.92s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1172918187.8 (7.15s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1176613393.1 (6.88s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1184827757.3 (7.12s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1172447759.9 (6.89s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1176802781.7 (7.05s)

H estimated with rp=[0, 0, 0] and 5000 weight: 1166659106.7 (6.94s)

Analyze the results...

value H(S) = 1172026699.0

average value H̃ = 1171656079.4

average absolue error H̃ = 4644485.1

average relative error H̃ = 0.003963

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0] and 10000 weight: 1172574141.5 (13.69s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1168301951.0 (13.57s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1178501033.5 (13.98s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1171799857.8 (13.89s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1173758714.2 (14.17s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1171800491.2 (13.42s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1172593854.0 (13.09s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1173507216.3 (13.07s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1168384229.3 (13.24s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1169048311.1 (13.57s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1169061587.6 (13.38s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1176580819.7 (13.72s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1170873057.2 (13.8s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1175994801.7 (13.81s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1171180382.2 (14.52s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1175298491.2 (14.61s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1176991458.0 (13.88s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1166964744.2 (14.07s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1173443069.1 (14.83s)

H estimated with rp=[0, 0, 0] and 10000 weight: 1172063746.0 (13.95s)

Analyze the results...

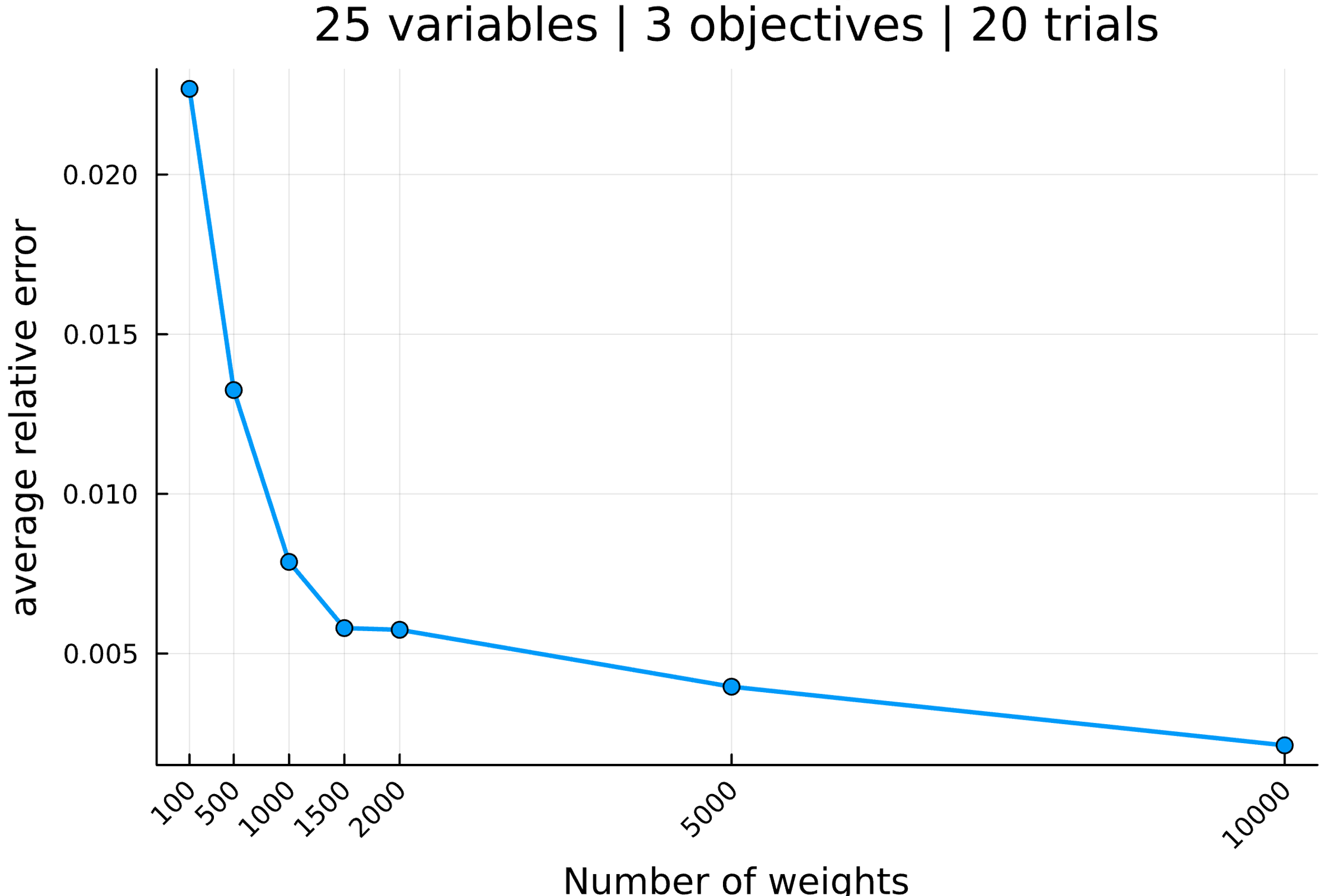
value H(S) = 1172026699.0

average value H̃ = 1172436097.9

average absolue error H̃ = 2491966.8

average relative error H̃ = 0.002126

All average relative error H̃ = [0.022683996576157956, 0.013251201160157332, 0.007870866669123077, 0.005798150707821767, 0.005744806828619842, 0.003962780962221546, 0.0021262030813482984]



--------------------------------------------------------------------------------

Setup the parameters...

number of variables : 25

number of objectives : 4

reference point : [0, 0, 0, 0]

interval of #weights : [(100, 100), (500, 500), (1000, 1000), (1500, 1500), (2000, 2000), (5000, 5000), (10000, 10000)]

solver MIP invoked : Gurobi.Optimizer

number of trials : 20

Generate an mo01UKP instance...

Compute S, the set of nondominated points...

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

|S| = 168 (19.08s)

Compute H, the hypervolume measure...

H(S) = 1072812283438.0

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1063190302607.3 (0.32s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1058951472671.1 (0.16s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1166591665428.2 (0.15s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1012412434669.2 (0.16s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 997553033785.4 (0.14s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 988581728065.3 (0.16s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1054994296504.0 (0.15s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1089587758674.1 (0.15s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1095541418790.1 (0.16s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1098638341001.3 (0.15s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1006658090487.6 (0.17s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1143922228572.6 (0.16s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1047062555234.2 (0.15s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1123847181707.7 (0.15s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1181010640764.0 (0.15s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1032508227288.4 (0.15s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 974539070397.6 (0.15s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1180682266740.4 (0.19s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1072491476274.4 (0.17s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 1140765402271.2 (0.18s)

Analyze the results...

value H(S) = 1072812283438.0

average value H̃ = 1076476479596.7

average absolue error H̃ = 52863439142.1

average relative error H̃ = 0.049276

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1055972559955.2 (0.81s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1127262663556.1 (0.83s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1082214835924.3 (0.8s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1073523101358.5 (0.79s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1082542069710.9 (0.8s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1093228709441.3 (0.75s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1067146460000.3 (0.95s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1060454700062.5 (0.8s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1080160925430.4 (0.75s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1119267904169.9 (0.69s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1023808013977.2 (0.71s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1036549918433.2 (0.78s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1056838140500.4 (0.78s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1071088925073.0 (0.79s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1081076732895.7 (0.82s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1068133097149.4 (0.69s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1053545880679.5 (0.81s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1071186272255.6 (0.72s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1090587546977.9 (0.76s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 1107208004938.5 (0.88s)

Analyze the results...

value H(S) = 1072812283438.0

average value H̃ = 1075089823124.5

average absolue error H̃ = 18617426315.9

average relative error H̃ = 0.017354

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1042720881682.1 (1.59s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1055366149650.6 (1.51s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1065707963850.5 (1.7s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1075989906547.5 (1.59s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1056992124644.2 (1.71s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1081233111803.5 (1.52s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1097828466185.3 (1.45s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1069057333105.8 (1.45s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1088449154508.1 (1.71s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1057883058704.2 (1.67s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1098833290483.9 (1.48s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1036308876267.0 (1.63s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1055485358646.7 (1.64s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1052636076933.9 (1.58s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1070884588009.0 (1.65s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1076127491293.4 (1.62s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1066477487440.3 (1.69s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1077386575241.3 (1.58s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1079280288539.1 (1.47s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 1050753030520.9 (1.6s)

Analyze the results...

value H(S) = 1072812283438.0

average value H̃ = 1067770060702.9

average absolue error H̃ = 14305224444.9

average relative error H̃ = 0.013334

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1082680068965.9 (2.55s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1065569005089.4 (2.21s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1052446037177.5 (2.47s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1048898911274.4 (2.36s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1031352491267.2 (2.26s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1091778852860.0 (2.53s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1072218328152.7 (2.37s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1071406286383.9 (2.34s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1096752269322.3 (2.54s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1086157703108.5 (2.39s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1073370001938.8 (2.33s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1078965867560.8 (2.47s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1083399876399.1 (2.31s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1086049118500.4 (2.39s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1068767629122.1 (2.48s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1061771712062.2 (2.3s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1076474302655.9 (2.36s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1074905991327.8 (2.48s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1067744894253.5 (2.36s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 1069986845404.6 (2.43s)

Analyze the results...

value H(S) = 1072812283438.0

average value H̃ = 1072034809641.3

average absolue error H̃ = 11018595622.6

average relative error H̃ = 0.010271

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1072981695060.0 (3.13s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1068997495241.2 (3.01s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1087189180112.7 (3.32s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1097031752122.5 (2.86s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1099984674350.8 (3.44s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1057255533705.1 (2.91s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1084009559907.6 (3.29s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1087004407686.4 (3.06s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1079313578229.5 (3.09s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1071021185608.8 (3.09s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1069998429371.9 (3.03s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1075023931627.0 (3.23s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1054818871471.0 (3.1s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1071268446249.7 (3.35s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1098127192966.3 (2.99s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1059909969219.4 (3.38s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1067185345323.2 (3.01s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1082651670771.6 (3.28s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1064198570397.9 (3.17s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 1083322573758.8 (3.25s)

Analyze the results...

value H(S) = 1072812283438.0

average value H̃ = 1076564703159.1

average absolue error H̃ = 10818090156.5

average relative error H̃ = 0.010084

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1070526611859.8 (8.03s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1077915066234.1 (8.0s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1066448061970.1 (8.22s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1088300273751.7 (8.3s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1078741953482.0 (8.42s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1073911317444.5 (8.6s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1063214184043.7 (8.4s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1073847697186.9 (8.3s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1076916921013.3 (8.51s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1075743748546.7 (8.54s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1069716978466.9 (8.4s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1076375562857.5 (8.21s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1074713890577.0 (8.28s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1055403866333.0 (8.33s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1076616893786.0 (8.58s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1072122281760.8 (8.62s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1090541596971.2 (8.57s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1063858997538.8 (8.64s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1067999842221.1 (8.63s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 1074733407547.3 (8.92s)

Analyze the results...

value H(S) = 1072812283438.0

average value H̃ = 1073382457679.6

average absolue error H̃ = 5890918572.6

average relative error H̃ = 0.005491

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1068484940654.3 (17.11s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1074768652957.0 (17.29s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1073928603879.4 (16.71s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1072425975574.7 (16.5s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1059716582285.0 (16.54s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1070904274988.5 (16.54s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1066503268399.0 (16.34s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1063166323872.6 (16.72s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1064630808754.7 (17.21s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1072924119834.7 (16.84s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1067120455519.4 (16.14s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1072898625684.9 (14.76s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1062865863877.9 (15.13s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1068536420969.8 (15.03s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1080212918943.7 (15.27s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1062682041687.2 (15.86s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1078423866930.9 (16.51s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1077902645546.4 (15.85s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1085382616435.5 (16.34s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 1072707656038.8 (16.75s)

Analyze the results...

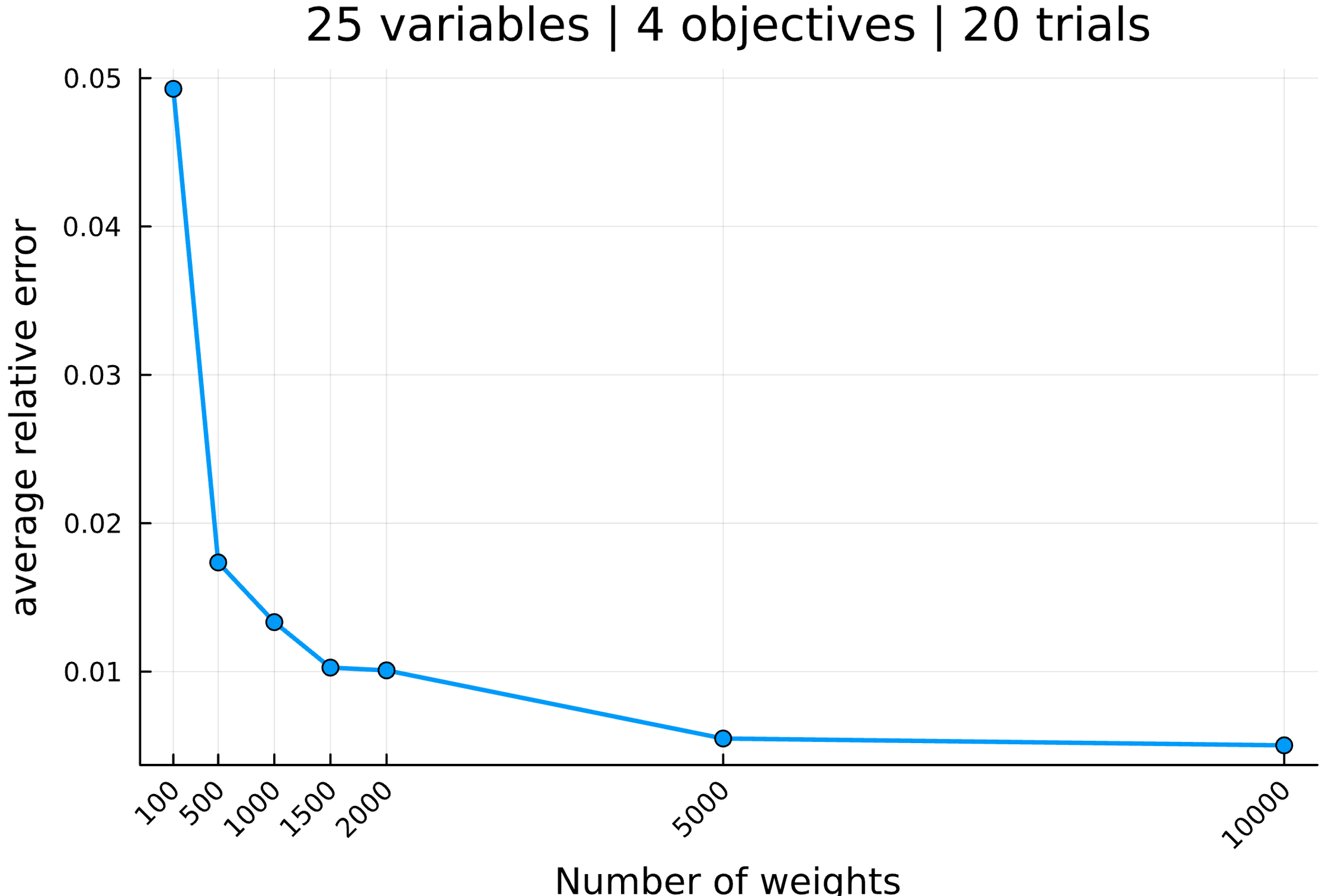
value H(S) = 1072812283438.0

average value H̃ = 1070809333141.7

average absolue error H̃ = 5397328567.1

average relative error H̃ = 0.005031

All average relative error H̃ = [0.0492755722116157, 0.017353852676063465, 0.013334322011212313, 0.010270758260975125, 0.010083861196836803, 0.005491099107972671, 0.005031009292542752]



--------------------------------------------------------------------------------

Setup the parameters...

number of variables : 25

number of objectives : 5

reference point : [0, 0, 0, 0, 0]

interval of #weights : [(100, 100), (500, 500), (1000, 1000), (1500, 1500), (2000, 2000), (5000, 5000), (10000, 10000)]

solver MIP invoked : Gurobi.Optimizer

number of trials : 20

Generate an mo01UKP instance...

Compute S, the set of nondominated points...

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

|S| = 656 (20864.42s)

Compute H, the hypervolume measure...

H(S) = 848102789368584.0

Compute H̃, the estimation of H...

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 770711593567709.0 (0.38s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 875432896191438.5 (0.17s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 770187416057417.9 (0.17s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 859234399160869.9 (0.19s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 913711770201604.8 (0.19s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 897918175269601.1 (0.2s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 801169186025408.0 (0.18s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 879629823863205.5 (0.2s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 825780369858275.5 (0.19s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 868037465924615.5 (0.19s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 912598836294176.4 (0.2s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 907542548999020.4 (0.2s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 903630403585622.5 (0.21s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 912060397652744.8 (0.2s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 799521550068495.2 (0.19s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 795272843375863.4 (0.21s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 873594743285545.1 (0.2s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 891395692679195.6 (0.21s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 873437180088593.6 (0.2s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 100 weight: 874411274207953.0 (0.24s)

Analyze the results...

value H(S) = 848102789368584.0

average value H̃ = 860263928317868.0

average absolue error H̃ = 44758516675117.3

average relative error H̃ = 0.052775

Compute H̃, the estimation of H...

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 827682619531957.9 (1.0s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 867829117510428.4 (0.95s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 806054977105271.2 (1.0s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 789990737883479.5 (0.97s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 832752054882056.5 (0.97s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 845034133881852.8 (1.01s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 856104023777755.2 (0.96s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 813535867721117.1 (0.96s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 834236725399261.5 (1.03s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 858991412648696.8 (1.03s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 864728197739873.5 (0.99s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 859705724249030.1 (0.93s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 807198418001139.6 (0.92s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 826806263122091.9 (0.94s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 843375794002793.1 (0.99s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 867987609173366.4 (1.03s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 813281566920804.0 (0.94s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 872522035695444.8 (0.97s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 826687324511585.9 (0.97s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 500 weight: 863906126559606.1 (0.99s)

Analyze the results...

value H(S) = 848102789368584.0

average value H̃ = 838920536515880.6

average absolue error H̃ = 21877446093256.3

average relative error H̃ = 0.025796

Compute H̃, the estimation of H...

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 836299139339273.9 (2.07s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 868723334392684.5 (2.0s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 855934559642659.4 (1.95s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 845868467905790.8 (2.03s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 843465756355260.6 (1.94s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 849330580130294.5 (2.02s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 834650166044132.6 (1.98s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 863816414775950.2 (1.88s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 877047191359057.0 (1.99s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 869881306344678.8 (2.02s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 828002484819806.5 (1.98s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 877750374354446.4 (1.96s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 858958728981439.0 (1.94s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 853420778068785.9 (1.96s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 853495615491933.5 (1.97s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 845714092057566.9 (2.04s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 830036230997226.9 (1.97s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 846294505192988.1 (1.91s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 836206441558738.9 (1.98s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1000 weight: 860262753555547.2 (1.99s)

Analyze the results...

value H(S) = 848102789368584.0

average value H̃ = 851757946068413.1

average absolue error H̃ = 12293938704476.2

average relative error H̃ = 0.014496

Compute H̃, the estimation of H...

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 845474811229110.1 (3.05s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 858053421536273.6 (3.03s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 839876533127792.6 (3.01s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 860389802032615.6 (3.02s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 859085468719320.6 (3.09s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 836407672509075.5 (2.9s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 860247059865041.6 (3.0s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 842463292150307.9 (3.0s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 823417745127028.4 (2.97s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 857465184503141.5 (2.97s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 846389506826138.8 (2.99s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 860027133253790.4 (3.1s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 840250260584637.6 (2.97s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 838520120836570.8 (3.0s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 844758972362602.1 (3.07s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 847463777959779.2 (3.07s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 822017003966707.2 (2.97s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 868490651128308.4 (3.02s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 848273458600821.5 (2.98s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 1500 weight: 841529026269983.2 (3.05s)

Analyze the results...

value H(S) = 848102789368584.0

average value H̃ = 847030045129452.4

average absolue error H̃ = 9793730708195.8

average relative error H̃ = 0.011548

Compute H̃, the estimation of H...

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 858017832270575.2 (4.07s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 864087495223219.4 (4.02s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 855837708712005.5 (4.16s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 828828013023231.4 (4.05s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 838822087536068.4 (4.07s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 850178971590173.1 (4.09s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 838672452698226.1 (4.11s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 855938703782025.0 (4.05s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 851893093535921.5 (4.05s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 872182701283412.5 (4.17s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 848219100269382.1 (4.15s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 857079996243417.9 (4.2s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 853071442228303.6 (4.04s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 847875099362317.5 (4.19s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 854634761538755.2 (4.37s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 840410440735134.1 (4.19s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 844965543473478.5 (4.26s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 864081001176138.5 (4.27s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 854649876497526.9 (4.47s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 2000 weight: 867981464349159.9 (4.26s)

Analyze the results...

value H(S) = 848102789368584.0

average value H̃ = 852371389276423.6

average absolue error H̃ = 9172909846144.4

average relative error H̃ = 0.010816

Compute H̃, the estimation of H...

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 829330082584159.2 (10.9s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 854561993889280.8 (10.74s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 855462349160687.9 (10.62s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 853159352218252.0 (10.46s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 850820019784565.2 (10.61s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 851303150161030.5 (10.51s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 847889129901083.5 (10.39s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 858867153383692.5 (10.5s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 844904821012447.6 (10.48s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 845779285755428.8 (10.53s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 858531584184096.8 (10.36s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 829259738199058.5 (10.47s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 858339491740710.1 (10.69s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 846744176927438.5 (10.58s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 847557656236862.9 (10.62s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 863342035059667.4 (10.78s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 852059237109044.1 (10.91s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 835605005896668.5 (10.95s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 858965400077060.1 (10.96s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 5000 weight: 862538003216828.1 (11.05s)

Analyze the results...

value H(S) = 848102789368584.0

average value H̃ = 850250983324903.1

average absolue error H̃ = 7923435799871.6

average relative error H̃ = 0.009343

Compute H̃, the estimation of H...

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 839371906218985.2 (21.66s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 851682648088253.5 (21.69s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 837642251550153.0 (21.59s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 852749309044278.9 (21.24s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 845470622198840.4 (21.56s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 858639912463905.2 (21.51s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 849216442251423.0 (20.56s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 843041543614196.1 (20.83s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 853824824613393.9 (21.02s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 847706164222906.4 (20.55s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 844979711446478.1 (19.86s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 846682935982162.9 (18.89s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 848034185979903.6 (19.49s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 851044657830080.4 (19.75s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 862664730670647.6 (19.12s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 843415148825816.1 (19.0s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 847268220503594.1 (19.74s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 851227621624652.1 (20.3s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 852298405439348.8 (20.35s)

Set parameter Username

Set parameter LicenseID to value 2585370

Academic license - for non-commercial use only - expires 2025-11-15

H estimated with rp=[0, 0, 0, 0, 0] and 10000 weight: 855156279567316.8 (20.98s)

Analyze the results...

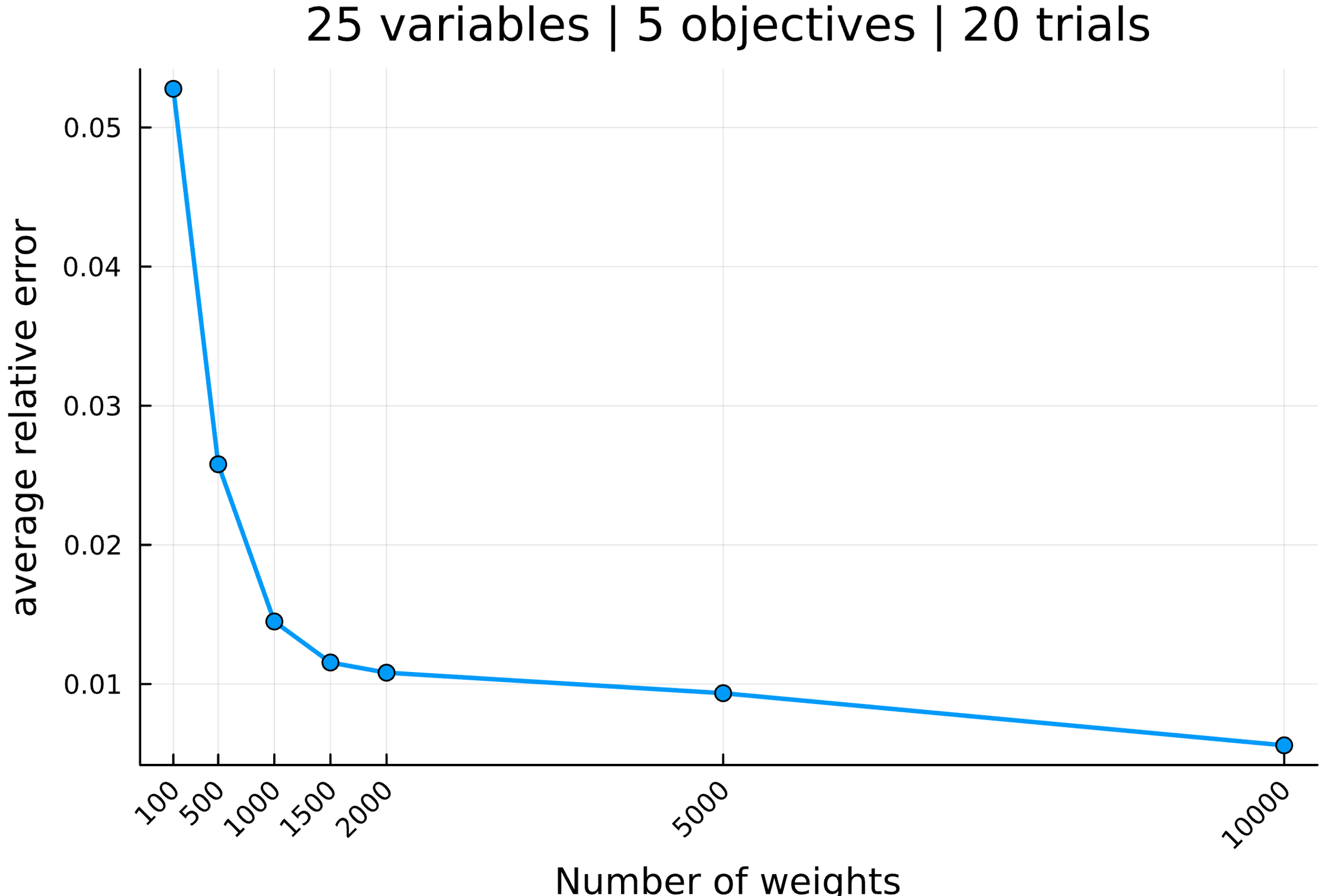
value H(S) = 848102789368584.0

average value H̃ = 849105876106816.8

average absolue error H̃ = 4744607052513.2

average relative error H̃ = 0.005594

All average relative error H̃ = [0.05277487261708007, 0.02579574830728259, 0.014495812133372477, 0.011547810985844393, 0.010815799642604268, 0.009342541846573382, 0.005594377370277949]



--------------------------------------------------------------------------------

Setup the parameters...

number of variables : 50

number of objectives : 3

reference point : [0, 0, 0]

interval of #weights : [(100, 100), (500, 500), (1000, 1000), (1500, 1500), (2000, 2000), (5000, 5000), (10000, 10000)]

solver MIP invoked : GLPK.Optimizer

number of trials : 20

Generate an mo01UKP instance...

Compute S, the set of nondominated points...

|S| = 815 (35.53s)

Compute H, the hypervolume measure...

H(S) = 7675763429.0

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0] and 100 weight: 6811575356.2 (0.24s)

H estimated with rp=[0, 0, 0] and 100 weight: 8132397139.4 (0.09s)

H estimated with rp=[0, 0, 0] and 100 weight: 7677168950.4 (0.08s)

H estimated with rp=[0, 0, 0] and 100 weight: 7885090496.3 (0.09s)

H estimated with rp=[0, 0, 0] and 100 weight: 7911874133.5 (0.08s)

H estimated with rp=[0, 0, 0] and 100 weight: 7768863859.3 (0.07s)

H estimated with rp=[0, 0, 0] and 100 weight: 7466691838.8 (0.07s)

H estimated with rp=[0, 0, 0] and 100 weight: 7567245864.5 (0.08s)

H estimated with rp=[0, 0, 0] and 100 weight: 8014687393.4 (0.09s)

H estimated with rp=[0, 0, 0] and 100 weight: 7897434336.5 (0.08s)

H estimated with rp=[0, 0, 0] and 100 weight: 6943358665.0 (0.06s)

H estimated with rp=[0, 0, 0] and 100 weight: 7769346937.4 (0.07s)

H estimated with rp=[0, 0, 0] and 100 weight: 7460866334.7 (0.08s)

H estimated with rp=[0, 0, 0] and 100 weight: 7152619246.4 (0.07s)

H estimated with rp=[0, 0, 0] and 100 weight: 7353204268.4 (0.07s)

H estimated with rp=[0, 0, 0] and 100 weight: 7064682431.1 (0.07s)

H estimated with rp=[0, 0, 0] and 100 weight: 7330889941.1 (0.07s)

H estimated with rp=[0, 0, 0] and 100 weight: 7799665232.8 (0.09s)

H estimated with rp=[0, 0, 0] and 100 weight: 7448416960.8 (0.08s)

H estimated with rp=[0, 0, 0] and 100 weight: 7619928429.1 (0.08s)

Analyze the results...

value H(S) = 7675763429.0

average value H̃ = 7553800390.8

average absolue error H̃ = 299428800.0

average relative error H̃ = 0.039010

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0] and 500 weight: 7495069817.5 (0.39s)

H estimated with rp=[0, 0, 0] and 500 weight: 7570999633.5 (0.38s)

H estimated with rp=[0, 0, 0] and 500 weight: 7773306216.2 (0.4s)

H estimated with rp=[0, 0, 0] and 500 weight: 7639900098.4 (0.43s)

H estimated with rp=[0, 0, 0] and 500 weight: 7610087630.9 (0.41s)

H estimated with rp=[0, 0, 0] and 500 weight: 7565172214.7 (0.42s)

H estimated with rp=[0, 0, 0] and 500 weight: 7769532043.7 (0.43s)

H estimated with rp=[0, 0, 0] and 500 weight: 7735311537.8 (0.4s)

H estimated with rp=[0, 0, 0] and 500 weight: 7682773184.5 (0.43s)

H estimated with rp=[0, 0, 0] and 500 weight: 7588220074.0 (0.4s)

H estimated with rp=[0, 0, 0] and 500 weight: 7574253544.4 (0.4s)

H estimated with rp=[0, 0, 0] and 500 weight: 7780482869.5 (0.4s)

H estimated with rp=[0, 0, 0] and 500 weight: 7714759606.3 (0.4s)

H estimated with rp=[0, 0, 0] and 500 weight: 7467255991.9 (0.39s)

H estimated with rp=[0, 0, 0] and 500 weight: 7591375027.5 (0.42s)

H estimated with rp=[0, 0, 0] and 500 weight: 7659262711.2 (0.39s)

H estimated with rp=[0, 0, 0] and 500 weight: 7788390484.4 (0.43s)

H estimated with rp=[0, 0, 0] and 500 weight: 7676107089.1 (0.39s)

H estimated with rp=[0, 0, 0] and 500 weight: 7879382484.5 (0.46s)

H estimated with rp=[0, 0, 0] and 500 weight: 7687076308.4 (0.44s)

Analyze the results...

value H(S) = 7675763429.0

average value H̃ = 7662435928.4

average absolue error H̃ = 86276254.0

average relative error H̃ = 0.011240

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0] and 1000 weight: 7671656095.4 (0.78s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7709062728.5 (0.8s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7711430844.0 (0.79s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7688744845.3 (0.8s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7799039930.3 (0.86s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7699722810.1 (0.83s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7656346339.6 (0.81s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7609853283.7 (0.81s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7730084319.4 (0.84s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7538696556.4 (0.82s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7442608045.3 (0.75s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7782696809.5 (0.83s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7637295935.1 (0.79s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7619925692.6 (0.8s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7722701215.6 (0.82s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7567852399.7 (0.8s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7646475843.1 (0.81s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7624322614.4 (0.86s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7799643647.3 (0.87s)

H estimated with rp=[0, 0, 0] and 1000 weight: 7676361985.4 (0.8s)

Analyze the results...

value H(S) = 7675763429.0

average value H̃ = 7666726097.0

average absolue error H̃ = 65222816.5

average relative error H̃ = 0.008497

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0] and 1500 weight: 7581000346.0 (1.22s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7666873331.2 (1.24s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7641779521.9 (1.22s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7672473001.3 (1.27s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7763438315.8 (1.27s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7590600315.4 (1.23s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7660605314.6 (1.19s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7758566663.7 (1.25s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7680299417.4 (1.18s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7766969575.5 (1.25s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7690970823.7 (1.22s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7514225810.9 (1.19s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7605152400.4 (1.2s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7684192484.3 (1.21s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7669757742.4 (1.26s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7880886351.3 (1.27s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7609502339.4 (1.23s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7715126313.1 (1.25s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7701774356.8 (1.22s)

H estimated with rp=[0, 0, 0] and 1500 weight: 7701755442.5 (1.31s)

Analyze the results...

value H(S) = 7675763429.0

average value H̃ = 7677797493.4

average absolue error H̃ = 56600481.0

average relative error H̃ = 0.007374

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0] and 2000 weight: 7653470947.7 (1.62s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7678995248.8 (1.6s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7596367003.2 (1.63s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7719203128.1 (1.67s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7592678115.9 (1.66s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7669473653.2 (1.65s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7657077643.3 (1.62s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7685908799.6 (1.61s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7576463355.2 (1.62s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7702494141.4 (1.64s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7714461153.0 (1.71s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7720352179.7 (1.69s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7601210297.2 (1.67s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7576265528.0 (1.62s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7662676059.6 (1.6s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7639907221.6 (1.64s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7675616645.9 (1.63s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7784766585.0 (1.72s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7656807571.7 (1.62s)

H estimated with rp=[0, 0, 0] and 2000 weight: 7654719730.3 (1.65s)

Analyze the results...

value H(S) = 7675763429.0

average value H̃ = 7660945750.4

average absolue error H̃ = 42401401.8

average relative error H̃ = 0.005524

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0] and 5000 weight: 7648070271.1 (4.12s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7626730911.3 (4.06s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7715292097.0 (4.13s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7672977156.2 (4.09s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7704122497.6 (4.09s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7673092961.9 (4.03s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7652589838.8 (4.09s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7699033381.6 (4.16s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7651957302.3 (4.15s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7672699359.9 (4.23s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7626670253.8 (4.04s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7570661300.6 (4.04s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7696167321.9 (4.2s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7728196359.6 (4.21s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7626394612.4 (4.07s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7718596434.2 (4.16s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7682220841.9 (4.24s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7668890282.1 (4.21s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7721213922.5 (4.21s)

H estimated with rp=[0, 0, 0] and 5000 weight: 7636887343.4 (4.19s)

Analyze the results...

value H(S) = 7675763429.0

average value H̃ = 7669623222.5

average absolue error H̃ = 32013748.9

average relative error H̃ = 0.004171

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0] and 10000 weight: 7660222522.8 (8.24s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7733782400.7 (8.44s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7656210625.8 (8.32s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7673930005.3 (8.16s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7712234204.2 (8.16s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7719200932.6 (8.18s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7680760072.8 (8.2s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7671839083.9 (8.13s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7629009100.5 (7.96s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7664696286.8 (8.15s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7680889076.0 (8.14s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7649098992.8 (8.05s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7638239757.7 (8.11s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7688684838.4 (8.2s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7659349181.8 (8.25s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7692682869.5 (8.66s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7669220125.4 (8.24s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7657785855.2 (8.09s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7665728573.3 (8.1s)

H estimated with rp=[0, 0, 0] and 10000 weight: 7670490469.8 (8.14s)

Analyze the results...

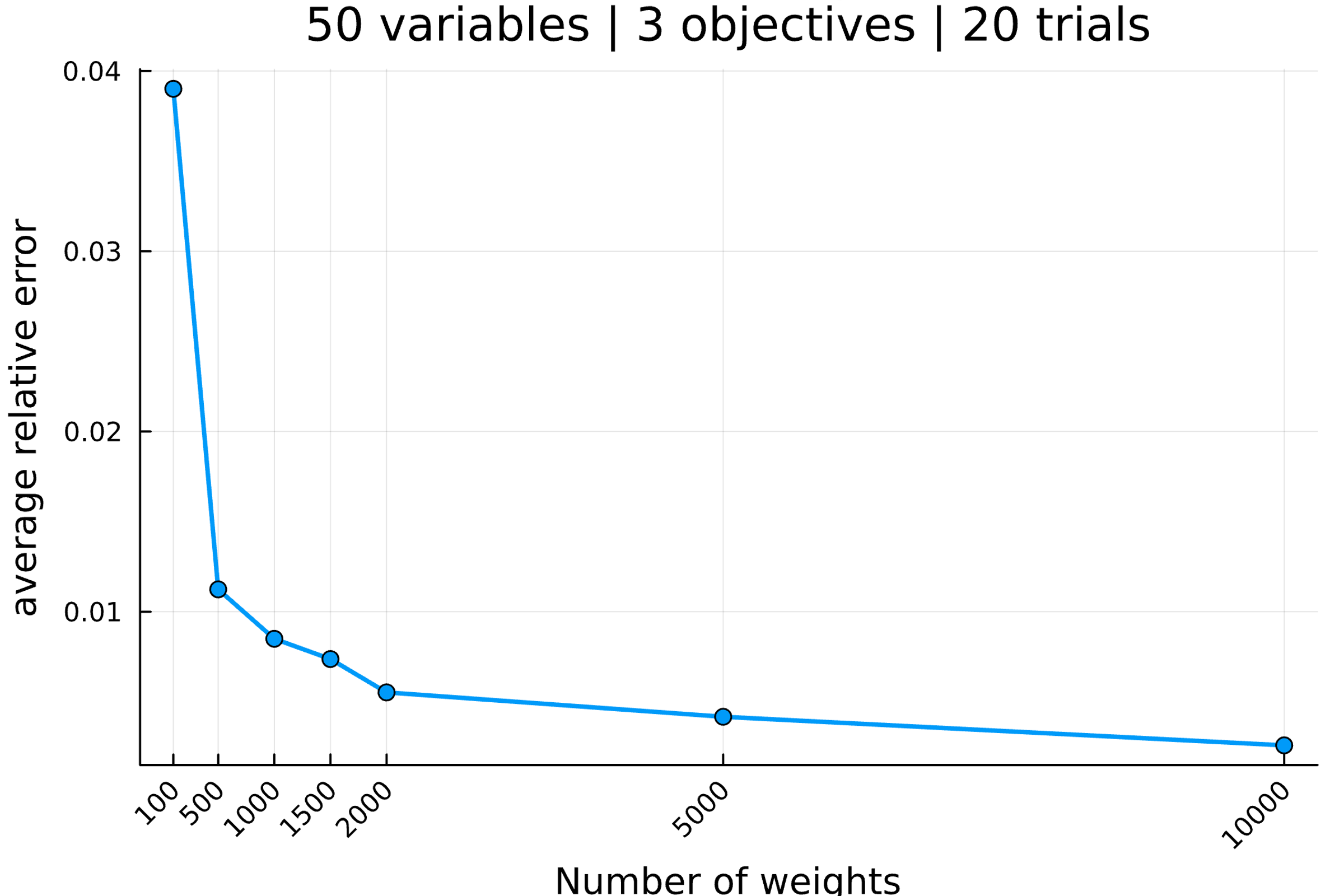
value H(S) = 7675763429.0

average value H̃ = 7673702748.8

average absolue error H̃ = 19849719.4

average relative error H̃ = 0.002586

All average relative error H̃ = [0.03900964416311635, 0.011240087689786004, 0.008497241624009609, 0.007373922028842639, 0.00552406314123899, 0.004170757635285372, 0.0025860254220003145]



--------------------------------------------------------------------------------

Setup the parameters...

number of variables : 50

number of objectives : 4

reference point : [0, 0, 0, 0]

interval of #weights : [(100, 100), (500, 500), (1000, 1000), (1500, 1500), (2000, 2000), (5000, 5000), (10000, 10000)]

solver MIP invoked : GLPK.Optimizer

number of trials : 20

Generate an mo01UKP instance...

Compute S, the set of nondominated points...

|S| = 1590 (9455.97s)

Compute H, the hypervolume measure...

H(S) = 17495609612220.0

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0, 0] and 100 weight: 16805044403289.6 (0.3s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 17072989519380.3 (0.11s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 17443248339518.3 (0.11s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 16918563608829.3 (0.1s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 17314419933119.0 (0.11s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 17024719706924.8 (0.1s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 17799678789955.1 (0.11s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 17446831119737.6 (0.11s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 17288253473069.6 (0.1s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 16778800274281.1 (0.11s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 17454297358938.9 (0.11s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 15677960749383.3 (0.09s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 20021835578557.8 (0.12s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 17950609030702.0 (0.12s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 18277089434954.6 (0.12s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 16398936779670.5 (0.09s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 17265983527195.4 (0.1s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 17654967723143.4 (0.12s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 18520593870963.8 (0.12s)

H estimated with rp=[0, 0, 0, 0] and 100 weight: 18730708938658.0 (0.13s)

Analyze the results...

value H(S) = 17495609612220.0

average value H̃ = 17492276608013.6

average absolue error H̃ = 651954612345.8

average relative error H̃ = 0.037264

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17677584550808.6 (0.54s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17003189420666.5 (0.53s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17158595234641.3 (0.52s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17348358220802.5 (0.54s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17607809117258.7 (0.53s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17937051115192.1 (0.55s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 18002958865447.3 (0.52s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17596502837457.0 (0.54s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17527835822590.1 (0.53s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17529679222826.2 (0.53s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17344866738105.1 (0.54s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17455455257165.4 (0.52s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 18122330189158.7 (0.6s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17926301794540.4 (0.52s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17935105938111.5 (0.55s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17142853767960.0 (0.54s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 18471082991165.5 (0.56s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17259243367364.7 (0.53s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17690316687485.7 (0.57s)

H estimated with rp=[0, 0, 0, 0] and 500 weight: 17741945875998.6 (0.52s)

Analyze the results...

value H(S) = 17495609612220.0

average value H̃ = 17623953350737.3

average absolue error H̃ = 304014266400.8

average relative error H̃ = 0.017377

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17351706657518.8 (1.09s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17606908077667.4 (1.07s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17569714289895.7 (1.09s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17403992584132.4 (1.1s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17541660556983.8 (1.05s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17597857783324.9 (1.07s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17145656780511.8 (1.06s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17498355405310.8 (1.05s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17212486277442.7 (1.06s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17282698072327.0 (1.06s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17356471130561.0 (1.03s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17372437191107.2 (1.04s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17487588397510.0 (1.09s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 16769462594399.2 (1.01s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17636159665191.5 (1.12s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17408311325450.4 (1.03s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17443755246684.8 (1.07s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 16956454099291.3 (1.04s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17179190720621.2 (1.02s)

H estimated with rp=[0, 0, 0, 0] and 1000 weight: 17586413854630.8 (1.07s)

Analyze the results...

value H(S) = 17495609612220.0

average value H̃ = 17370364035528.1

average absolue error H̃ = 182025811438.4

average relative error H̃ = 0.010404

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17462440687230.0 (1.58s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17108474381568.8 (1.54s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17755709992559.5 (1.6s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17686765473379.8 (1.62s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17362817629427.1 (1.54s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17679460746961.3 (1.62s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17537849360149.4 (1.65s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17632611599366.7 (1.62s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17191942538064.1 (1.57s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17675644900918.8 (1.64s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17101286957590.2 (1.58s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17447230019716.8 (1.65s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17428638518411.3 (1.61s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17038468170517.4 (1.57s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17485886552970.6 (1.62s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17809680512727.8 (1.7s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17903722446611.6 (1.65s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17358317396699.1 (1.61s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17604371400836.9 (1.58s)

H estimated with rp=[0, 0, 0, 0] and 1500 weight: 17544161865627.0 (1.65s)

Analyze the results...

value H(S) = 17495609612220.0

average value H̃ = 17490774057566.7

average absolue error H̃ = 192223772347.2

average relative error H̃ = 0.010987

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17440293492524.3 (2.2s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17584293029187.8 (2.12s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17712913002958.1 (2.18s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17537645886869.5 (2.12s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17472856704129.1 (2.15s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17436464026679.9 (2.12s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17584209777251.2 (2.18s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17443185628690.1 (2.11s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17121400795636.8 (2.12s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17392112352922.2 (2.16s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17453948818365.6 (2.11s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17840798847887.9 (2.2s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17298599573273.9 (2.1s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 18046474318044.5 (2.3s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17322483813371.4 (2.17s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17450231672630.8 (2.14s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17664021821511.5 (2.13s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17212031104165.9 (2.11s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17565752339788.6 (2.13s)

H estimated with rp=[0, 0, 0, 0] and 2000 weight: 17629823680360.9 (2.09s)

Analyze the results...

value H(S) = 17495609612220.0

average value H̃ = 17510477034312.5

average absolue error H̃ = 155677197295.5

average relative error H̃ = 0.008898

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17627168356692.0 (5.39s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17553980269322.4 (5.46s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17438445109983.9 (5.35s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17262853907626.9 (5.21s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17598095850713.3 (5.41s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17527104979972.3 (5.33s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17507401932206.3 (5.32s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17462075653829.1 (5.42s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17389287962051.2 (5.37s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17628830997571.9 (5.43s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17663290553309.0 (5.51s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17478542350793.2 (5.42s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17462342613473.1 (5.37s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17451785787389.2 (5.29s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17635425582821.9 (5.45s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17327150697118.3 (5.31s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17420375439546.8 (5.25s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17560269673368.6 (5.48s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17462199161358.9 (5.3s)

H estimated with rp=[0, 0, 0, 0] and 5000 weight: 17320088952241.5 (5.36s)

Analyze the results...

value H(S) = 17495609612220.0

average value H̃ = 17488835791569.5

average absolue error H̃ = 90881989250.3

average relative error H̃ = 0.005195

Compute H̃, the estimation of H...

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17671237045767.0 (10.84s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17604331967412.8 (10.74s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17506427255045.8 (10.73s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17452555089455.2 (10.68s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17502373675726.0 (10.78s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17409610144253.8 (10.87s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17469172477034.0 (10.76s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17601498120326.0 (10.48s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17628873439065.5 (10.63s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17523728318610.3 (10.5s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17567439471473.7 (10.51s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17652540846612.3 (10.65s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17542852055833.4 (10.58s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17339351720372.8 (10.53s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17313182222704.4 (10.43s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17494081545725.7 (10.53s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17523287411395.8 (10.66s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17734699404255.4 (10.74s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17463090294559.4 (10.67s)

H estimated with rp=[0, 0, 0, 0] and 10000 weight: 17569780034905.0 (10.6s)

Analyze the results...

value H(S) = 17495609612220.0

average value H̃ = 17528505627026.7

average absolue error H̃ = 85718393950.2

average relative error H̃ = 0.004899

All average relative error H̃ = [0.03726389801761927, 0.017376603224411875, 0.010404085108942319, 0.010986971966550019, 0.008898072187594589, 0.005194559736106478, 0.0048994231038576915]

