Notes: 'n' represents the dimension of the corresponding problem. 'NI' represents the total number of iterations. 'NF' represents the number of the function evaluation. 'T' represents the running time of the algorithm. '$\|g^\star\|$' represents the gradient value for the solution. The values of 'NI', 'NF', 'T' and '$\|g^\star\|$' are set as 'NaN' if and only if the number of iterations is greater than 3000.

Table 1: Numerical results for Test 2

Problem/n	SHCGMcc-MED NI/NF/T/$\|g^\star\|$	PRP NI/NF/T/$\|g^\star\|$	HS NI/NF/T/$\|g^\star\|$	LS NI/NF/T/$\|g^\star\|$
cosine/600	43/100/0.028/5.46e-06	34/210/0.011/1.80e-06	73/298/0.013/7.31e-06	1269/5457/0.199/8.33e-06
cosine/3000	65/132/0.021/9.48e-06	31/170/0.022/7.86e-06	66/214/0.029/9.86e-06	284/1406/0.180/3.30e-06
cosine/10000	40/101/0.043/8.50e-06	41/236/0.089/7.37e-06	NaN/NaN/NaN/NaN	NaN/NaN/NaN/NaN
dixmaana/6000	13/70/0.199/5.33e-06	34/214/0.634/3.98e-06	28/172/0.654/1.76e-06	31/178/0.549/5.57e-06
dixmaana/9000	12/68/0.348/2.53e-06	28/151/0.682/4.91e-06	35/242/1.147/1.90e-06	29/156/0.803/7.07e-06
dixmaanb/4800	15/75/0.238/5.60e-06	24/172/0.469/1.93e-06	28/162/0.257/8.34e-06	29/172/0.273/2.86e-06
dixmaanb/24000	16/77/1.179/4.32e-06	36/220/3.079/7.74e-06	28/168/2.210/3.25e-06	51/330/4.175/4.84e-06
dixmaanc/270	19/72/0.069/2.85e-06	38/233/0.048/3.19e-06	30/185/0.045/5.27e-06	44/299/0.051/5.04e-06
dixmaanc/2700	48/111/0.112/7.66e-06	27/150/0.180/8.70e-06	24/129/0.112/9.41e-06	65/446/0.443/5.72e-06
dixmaand/1200	17/73/0.069/2.75e-06	30/159/0.070/6.63e-06	28/112/0.048/8.83e-06	38/238/0.121/5.81e-06
dixmaand/9000	17/76/0.246/5.80e-06	28/148/0.795/9.66e-06	29/148/0.700/4.52e-06	49/329/1.451/7.03e-06
dixmaane/2400	420/478/0.501/8.23e-06	384/1383/1.257/9.68e-06	314/509/0.560/9.18e-06	366/1413/1.453/9.11e-06
dixmaane/4800	478/550/0.840/9.45e-06	520/1876/2.761/7.62e-06	482/729/1.029/8.96e-06	651/2353/4.161/6.46e-06
dixmaanf/6000	577/638/2.095/8.89e-06	582/2067/4.629/9.83e-06	344/581/1.217/7.78e-06	643/2274/4.997/7.28e-06
dixmaanf/15000	1652/1885/15.316/8.60e-06	878/3146/26.141/8.00e-06	619/1011/8.856/6.21e-06	711/2435/21.005/7.87e-06
dixmaang/6000	733/817/3.101/8.09e-06	490/1751/6.252/8.06e-06	293/483/1.631/8.90e-06	371/1394/5.341/9.77e-06
dixmaang/12000	1380/1660/12.700/9.68e-06	526/2081/15.890/9.37e-06	560/894/6.799/5.08e-06	793/2745/20.309/9.51e-06
dixmaanh/6000	1211/1518/5.802/8.12e-06	636/2485/9.202/7.24e-06	361/605/2.243/7.91e-06	567/1990/5.530/9.12e-06
dixmaanh/15000	941/1014/9.153/9.84e-06	1111/4013/33.297/9.56e-06	527/837/6.907/6.06e-06	968/3620/28.352/7.48e-06
dixmaani/360	1464/1520/0.412/8.69e-06	1436/5250/1.162/8.55e-06	1683/2659/0.825/7.91e-06	2786/9725/2.395/8.16e-06
dixmaanj/3000	992/1104/1.162/8.57e-06	532/1971/2.152/5.50e-06	352/602/0.598/9.51e-06	523/1852/1.876/8.62e-06
dixmaanj/15000	281/356/2.918/9.82e-06	749/2755/22.654/8.69e-06	465/750/6.140/9.30e-06	635/2242/19.455/9.45e-06
dixmaank/6000	678/852/3.439/7.97e-06	369/1544/5.533/9.61e-06	354/570/1.186/9.84e-06	556/1904/7.437/9.56e-06
dixmaank/12000	307/384/3.038/8.89e-06	461/1776/12.864/9.58e-06	416/684/5.199/7.54e-06	622/2152/14.803/8.99e-06
dixmaanl/1200	2403/2504/1.165/9.99e-06	326/1327/0.526/9.48e-06	232/393/0.155/8.56e-06	1052/3890/1.666/9.54e-06
dixmaanl/2400	NaN/NaN/NaN/NaN	456/1792/1.736/8.43e-06	286/470/0.362/8.51e-06	406/1643/1.259/8.33e-06
dixon3dq/50	433/486/0.025/9.67e-06	572/2266/0.071/9.67e-06	399/620/0.021/9.83e-06	605/2128/0.069/8.57e-06
dixon3dq/150	1194/1243/0.053/9.95e-06	2340/8491/0.366/8.73e-06	1441/2244/0.127/7.85e-06	2409/8417/0.444/8.31e-06
dqdrtic/300	71/232/0.023/5.33e-06	151/743/0.045/3.11e-06	67/239/0.017/4.39e-06	104/496/0.024/4.56e-06
dqrtic/5000	44/148/0.215/2.99e-06	47/184/0.277/5.78e-06	56/197/0.272/6.46e-06	58/258/0.343/3.56e-06
dqdrtic/9000	113/310/0.042/6.81e-06	95/505/0.057/2.42e-06	73/272/0.031/1.08e-06	127/673/0.070/7.74e-06
edensch/500	43/101/0.026/6.31e-06	51/303/0.068/9.15e-06	43/156/0.043/7.43e-06	58/292/0.049/5.93e-06
edensch/1000	46/113/0.067/9.91e-06	42/192/0.079/7.17e-06	46/156/0.069/9.40e-06	56/383/0.164/9.78e-06
edensch/4000	76/177/0.316/7.86e-06	43/208/0.389/9.77e-06	207/1495/2.564/6.08e-06	39/168/0.302/7.97e-06
eg2/100	156/458/0.049/2.57e-06	467/2311/0.079/9.80e-06	58/259/0.010/8.11e-06	166/1305/0.053/2.20e-06
fletchcr/100	47/117/0.026/9.38e-06	44/167/0.012/5.03e-06	40/115/0.008/8.69e-06	60/234/0.014/8.38e-06
fletchcr/500	92/376/0.027/5.08e-06	85/509/0.023/1.61e-06	46/147/0.005/5.93e-06	66/427/0.026/3.11e-06
fletchcr/2000	82/354/0.020/5.66e-06	81/641/0.048/5.93e-06	280/2021/0.214/7.06e-06	165/1428/0.124/8.43e-06
freuroth/460	563/5098/0.262/9.92e-06	548/5041/0.324/1.95e-06	NaN/NaN/NaN/NaN	1670/17020/1.123/9.36e-06
genrose/100	688/805/0.043/7.52e-06	1621/6073/0.250/6.95e-06	897/1487/0.063/4.96e-06	1354/5000/0.243/8.50e-06
himmelbg/700	2/15/0.019/1.35e-29	2/15/0.002/1.68e-27	2/15/0.004/1.90e-27	2/15/0.004/1.68e-27
himmelbg/2400	2/10/0.003/5.14e-20	2/10/0.003/3.91e-19	2/10/0.003/1.49e-18	2/10/0.004/3.91e-19
liarwhd/6000	139/443/0.085/7.72e-06	121/701/0.063/7.69e-06	32/168/0.015/4.73e-06	82/572/0.046/6.15e-06
liarwhd/3000	175/478/0.063/5.74e-06	106/637/0.055/1.35e-06	41/214/0.015/9.81e-06	77/574/0.068/1.81e-06
penalty1/100	17/101/0.025/1.61e-06	13/83/0.005/7.77e-06	NaN/NaN/NaN/NaN	385/4209/0.314/1.00e-05
penalty1/1000	29/199/0.199/3.29e-06	293/2088/1.986/7.18e-06	NaN/NaN/NaN/NaN	859/9417/9.115/9.90e-06
quartc/4000	56/168/0.282/9.95e-06	58/263/0.456/6.27e-06	49/177/0.258/7.04e-06	68/299/0.487/9.49e-06
quartc/8000	72/195/0.690/4.80e-06	63/259/0.815/6.66e-06	77/214/0.874/6.61e-07	67/260/1.089/4.00e-06
quartc/50000	117/251/6.739/4.41e-06	97/408/10.214/5.31e-06	105/292/7.392/6.18e-06	102/397/9.692/8.18e-06
tridia/300	604/671/0.051/8.70e-06	941/3522/0.164/8.19e-06	483/758/0.055/9.09e-06	882/3006/0.100/9.40e-06
tridia/2000	1644/1720/0.164/8.81e-06	2538/9097/0.508/9.69e-06	2044/3166/0.237/8.47e-06	2748/9576/0.677/7.10e-06
woods/1500	95/273/0.051/5.75e-06	447/2112/0.167/9.19e-06	174/518/0.027/5.09e-06	188/898/0.047/9.50e-06
woods/2000	215/388/0.039/7.95e-06	517/2223/0.131/4.80e-06	177/510/0.036/7.84e-06	222/1042/0.065/9.12e-06
bdexp/5000	2/11/0.033/4.40e-111	2/11/0.009/2.19e-79	NaN/NaN/NaN/NaN	2/11/0.017/2.19e-79
bdexp/50000	2/16/0.153/3.49e-89	2/16/0.174/6.83e-37	NaN/NaN/NaN/NaN	2/16/0.076/6.83e-37
bdexp/5000	2/11/0.006/4.40e-111	2/11/0.006/2.19e-79	NaN/NaN/NaN/NaN	2/11/0.008/2.19e-79
exdenschnf/9000	46/117/0.046/7.00e-06	32/173/0.024/9.82e-06	32/179/0.025/9.00e-06	67/478/0.064/9.60e-06
exdenschnf/2800	40/109/0.008/4.37e-06	39/212/0.013/3.33e-06	42/265/0.017/9.91e-06	69/563/0.043/7.23e-06
exdenschnf/6000	36/103/0.021/6.08e-06	36/225/0.024/5.43e-06	31/139/0.014/7.86e-06	39/224/0.024/7.17e-06
exdenschnb/3000	39/97/0.015/4.70e-06	38/199/0.013/8.90e-06	30/177/0.012/1.18e-06	34/247/0.019/9.53e-06
exdenschnb/6000	17/75/0.009/5.65e-06	25/155/0.013/5.21e-06	26/146/0.012/9.55e-06	48/285/0.020/6.42e-06
exdenschnb/24000	18/79/0.020/9.65e-06	26/162/0.034/4.79e-07	28/151/0.031/7.90e-06	47/296/0.060/9.92e-06
genquartic/9000	28/88/0.027/4.99e-06	48/320/0.041/4.77e-06	88/445/0.058/9.63e-06	40/219/0.029/4.75e-06
genquartic/9000	28/88/0.014/4.99e-06	48/320/0.039/4.77e-06	88/445/0.051/9.63e-06	40/219/0.025/4.75e-06
genquartic/50000	19/82/0.047/3.41e-06	28/132/0.066/4.67e-06	NaN/NaN/NaN/NaN	54/326/0.157/7.97e-06
biggsb1/300	1301/1358/0.065/8.12e-06	1723/6327/0.299/8.90e-06	1431/2198/0.132/8.51e-06	2702/9423/0.447/6.74e-06
sine/500	189/388/0.056/5.49e-06	NaN/NaN/NaN/NaN	NaN/NaN/NaN/NaN	NaN/NaN/NaN/NaN
sine/1000	57/143/0.017/9.61e-06	102/455/0.071/5.78e-06	NaN/NaN/NaN/NaN	36/210/0.045/6.79e-06
sine/2000	193/474/0.096/9.15e-06	258/1041/0.310/3.68e-06	NaN/NaN/NaN/NaN	263/1324/0.428/9.53e-06
fletcbv3/100	2743/5765/0.537/9.73e-06	2737/6642/0.536/9.01e-06	2626/4741/0.433/6.90e-06	1015/2837/0.265/7.85e-06
nonscomp/5000	168/263/0.091/9.79e-06	86/452/0.073/9.65e-06	481/1559/0.138/5.88e-06	87/375/0.029/9.90e-06
nonscomp/8000	2004/2685/0.469/9.57e-06	64/261/0.029/6.88e-06	132/396/0.044/8.67e-06	75/350/0.036/8.88e-06
power1/150	1558/1647/0.066/9.88e-06	2815/10480/0.468/5.88e-06	2519/3981/0.201/9.49e-06	2726/9301/0.407/9.27e-06
raydan1/500	317/375/0.044/8.95e-06	261/1055/0.062/8.49e-06	175/315/0.016/7.03e-06	241/971/0.054/6.34e-06
raydan1/1000	NaN/NaN/NaN/NaN	310/1076/0.130/9.48e-06	251/435/0.065/5.91e-06	363/1351/0.137/7.04e-06
raydan2/1000	15/70/0.014/6.53e-06	21/151/0.011/1.43e-06	NaN/NaN/NaN/NaN	462/5057/0.598/8.71e-06
raydan2/2000	12/63/0.010/5.09e-06	47/297/0.050/1.46e-06	NaN/NaN/NaN/NaN	662/7271/1.379/2.26e-06
raydan2/5000	10/71/0.029/1.06e-06	13/86/0.025/8.16e-06	NaN/NaN/NaN/NaN	517/5674/1.680/5.33e-06
diagonal1/800	658/4620/0.541/9.92e-06	683/5335/0.667/9.28e-06	NaN/NaN/NaN/NaN	1143/10423/1.310/7.70e-06
diagonal1/2000	2996/29170/7.269/9.52e-06	NaN/NaN/NaN/NaN	NaN/NaN/NaN/NaN	NaN/NaN/NaN/NaN
diagonal2/5000	400/618/0.308/9.35e-06	551/2169/1.069/8.59e-06	NaN/NaN/NaN/NaN	577/2029/0.779/7.45e-06
diagonal2/10000	588/888/0.774/9.51e-06	781/2995/2.340/7.92e-06	NaN/NaN/NaN/NaN	998/3676/2.774/8.45e-06
diagonal3/500	899/7222/0.580/9.47e-06	614/5099/0.364/9.50e-06	1303/10734/0.787/8.38e-06	1222/11448/0.808/6.46e-06
diagonal3/1000	1140/9629/1.361/9.60e-06	1852/17580/2.189/8.53e-06	NaN/NaN/NaN/NaN	NaN/NaN/NaN/NaN
diagonal3/2000	2069/18930/4.846/9.84e-06	NaN/NaN/NaN/NaN	NaN/NaN/NaN/NaN	2533/23863/5.842/7.55e-06
osb2/11	410/741/0.135/6.78e-06	829/3002/0.268/6.94e-06	543/1172/0.137/8.77e-06	854/3319/0.326/7.93e-06
ie/150	16/52/0.594/8.93e-06	33/193/2.309/4.64e-06	27/149/1.659/6.62e-06	41/223/2.412/9.21e-06
ie/500	12/45/4.757/7.38e-06	37/232/24.227/9.21e-06	17/79/7.712/8.54e-06	30/202/20.399/6.62e-06
singx/500	210/505/0.373/9.26e-06	238/1033/0.681/9.40e-06	239/968/0.563/1.64e-06	192/1020/0.553/8.84e-07
singx/1000	375/878/2.159/9.07e-06	266/1299/3.952/7.38e-06	105/368/1.708/4.53e-06	284/1425/5.630/1.02e-06
singx/2000	338/818/12.485/8.51e-06	431/1958/28.877/4.06e-06	173/755/12.428/7.34e-06	262/1273/21.566/1.94e-06
lin/50	10/57/0.093/2.08e-06	11/73/0.019/3.44e-06	18/70/0.016/5.93e-06	75/719/0.138/1.53e-06
lin/100	13/63/0.022/8.86e-07	12/85/0.029/6.73e-06	31/160/0.049/9.55e-06	72/671/0.198/6.92e-06
pen1/200	183/954/0.093/9.34e-06	NaN/NaN/NaN/NaN	94/644/0.049/7.05e-07	122/910/0.070/7.53e-06
pen1/1000	143/1045/11.946/6.41e-06	NaN/NaN/NaN/NaN	297/2355/7.952/8.98e-06	168/1254/4.498/9.15e-06
pen2/160	298/943/0.117/9.90e-06	NaN/NaN/NaN/NaN	NaN/NaN/NaN/NaN	NaN/NaN/NaN/NaN
rosex/500	79/299/0.220/9.24e-06	153/934/0.828/3.56e-06	44/236/0.182/9.70e-07	77/559/0.517/3.82e-06
rosex/1000	83/296/1.725/2.64e-06	102/608/2.830/2.98e-06	43/204/1.914/3.95e-06	49/340/2.281/2.61e-06
trid/400	151/206/0.179/7.95e-06	105/370/0.175/5.10e-06	75/174/0.092/7.55e-06	107/476/0.207/9.93e-06
trid/800	127/182/0.389/8.68e-06	46/192/0.410/7.44e-06	48/147/0.357/7.39e-06	62/314/0.704/9.09e-06