With jac update kappa diff Ueq

ite 510 at time 4187.2314s I=0A CVed in 14ite 0.60523s voltage=2.0762V SOCn=-0.015053 SOCp=0.093855 dt=10 dV/dt=4.2254e-05

avg(ce)=1000.0535 avg(csn)=488.7436 avg(csp)=53519.5668 memory=45718548480 PreNewt=0.4946s MatInv t=0.09363s PostNewt t=0.0007681

updt dtso=0.028323s Calc Jac=0.40218s Calc f=0.023633s Calc gJacg=0.015621s assemble=0.024457

jacdiag=0.16953s jacce=0.055099s jacpe=0.066839s jacps=0.049927s jaccsn=0.031639s jaccsp=0.028768s

jaccedce=0.026544 jacpedpe=0.021084s jacpsdps=0.019415s jaccsdcs=0.10222s total=0.16926

ite 511 at time 4197.2314s I=0A CVed in 14ite 0.58387s voltage=2.0767V SOCn=-0.015057 SOCp=0.09349 dt=10 dV/dt=5.3665e-05

avg(ce)=1000.0498 avg(csn)=488.631 avg(csp)=53534.35 memory=45718548480 PreNewt=0.48091s MatInv t=0.0862s PostNewt t=0.0007265

updt dtso=0.027494s Calc Jac=0.39591s Calc f=0.022758s Calc gJacg=0.013315s assemble=0.021158

jacdiag=0.16623s jacce=0.054114s jacpe=0.066897s jacps=0.050389s jaccsn=0.029415s jaccsp=0.028468s

jaccedce=0.026633 jacpedpe=0.02015s jacpsdps=0.018967s jaccsdcs=0.10025s total=0.166

ite 512 at time 4207.2314s I=0A CVed in 14ite 0.58836s voltage=2.0771V SOCn=-0.015061 SOCp=0.093133 dt=10 dV/dt=3.6075e-05

avg(ce)=1000.0462 avg(csn)=488.5299 avg(csp)=53548.8393 memory=45718548480 PreNewt=0.47959s MatInv t=0.092077s PostNewt t=0.0008648

updt dtso=0.027803s Calc Jac=0.39407s Calc f=0.022743s Calc gJacg=0.013315s assemble=0.021372

jacdiag=0.16527s jacce=0.053761s jacpe=0.067051s jacps=0.048377s jaccsn=0.029878s jaccsp=0.029307s

jaccedce=0.026965 jacpedpe=0.020952s jacpsdps=0.018663s jaccsdcs=0.098423s total=0.165

Solver ends. Estimated charge time 3837.2314

The full program takes 500.49 sec

read section 0.05 sec

solver section 481.17 sec

plot section 15.83 sec

video section 0.00 sec

write section 3.44 sec

Total time of solver setup 386.79 sec

Total time of matrix inversion 70.69 sec

Total time of solver update 0.67 sec

Total time in solver iteration 458.14 sec

Without minor updates

ite 552 at time 4184.7266s I=0A CVed in 10ite 0.41534s voltage=2.0762V SOCn=-0.015053 SOCp=0.093856 dt=10 dV/dt=4.2146e-05

avg(ce)=1000.0694 avg(csn)=488.76 avg(csp)=53519.5231 memory=45864878080 PreNewt=0.33337s MatInv t=0.066396s PostNewt t=0.0005131

updt dtso=0.020321s Calc Jac=0.26867s Calc f=0.016754s Calc gJacg=0.010457s assemble=0.016907

jacdiag=0.1115s jacce=0.039347s jacpe=0.041281s jacps=0.035503s jaccsn=0.021222s jaccsp=0.019561s

jaccedce=0.013277 jacpedpe=0.014754s jacpsdps=0.013628s jaccsdcs=0.069662s total=0.11132

ite 553 at time 4194.7266s I=0A CVed in 10ite 0.41503s voltage=2.0767V SOCn=-0.015057 SOCp=0.093491 dt=10 dV/dt=5.3766e-05

avg(ce)=1000.0656 avg(csn)=488.6474 avg(csp)=53534.3063 memory=45864878080 PreNewt=0.33267s MatInv t=0.065763s PostNewt t=0.0005261

updt dtso=0.020064s Calc Jac=0.26976s Calc f=0.016468s Calc gJacg=0.0099212s assemble=0.016257

jacdiag=0.1111s jacce=0.039528s jacpe=0.04034s jacps=0.03665s jaccsn=0.021091s jaccsp=0.020764s

jaccedce=0.01296 jacpedpe=0.015031s jacpsdps=0.014091s jaccsdcs=0.068848s total=0.11093

ite 554 at time 4204.7266s I=0A CVed in 10ite 0.41635s voltage=2.0771V SOCn=-0.01506 SOCp=0.093134 dt=10 dV/dt=3.598e-05

avg(ce)=1000.062 avg(csn)=488.5463 avg(csp)=53548.7956 memory=45864878080 PreNewt=0.33145s MatInv t=0.068488s PostNewt t=0.000503

updt dtso=0.020225s Calc Jac=0.26846s Calc f=0.016668s Calc gJacg=0.010101s assemble=0.015783

jacdiag=0.11078s jacce=0.038669s jacpe=0.040593s jacps=0.036102s jaccsn=0.021452s jaccsp=0.020586s

jaccedce=0.01282 jacpedpe=0.015121s jacpsdps=0.014153s jaccsdcs=0.068519s total=0.11061

Solver ends. Estimated charge time 3834.7266

The full program takes 359.29 sec

read section 0.06 sec

solver section 341.55 sec

plot section 14.16 sec

video section 0.00 sec

write section 3.53 sec

Total time of solver setup 265.31 sec

Total time of matrix inversion 50.52 sec

Total time of solver update 0.46 sec

Total time in solver iteration 316.29 sec

With minor updates with and da/dcs jac

ite 508 at time 4181.5625s I=5A CVed in 12ite 0.50426s voltage=1.1027V SOCn=-0.099854 SOCp=0.029948 dt=10 dV/dt=-0.00039784

avg(ce)=1053.5085 avg(csn)=-1965.5223 avg(csp)=56109.8292 memory=45943238656 PreNewt=0.41145s MatInv t=0.07524s PostNewt t=0.0006137

updt dtso=0.0245s Calc Jac=0.33898s Calc f=0.01873s Calc gJacg=0.010177s assemble=0.018818

jacdiag=0.14357s jacce=0.045575s jacpe=0.056469s jacps=0.04372s jaccsn=0.025965s jaccsp=0.023248s

Newton method for the coupled system converged:12 , 7.1943e-07 , 1.8204e-09 , 1.2572e-11 , 5.1979e-08 , 2.7596e-07 , 1.6425e-06 , and -6.9465 , 6.3606 , 7.1943e-07

ite 509 at time 4191.5625s I=5A CVed in 12ite 0.50378s voltage=1.0986V SOCn=-0.1025 SOCp=0.027546 dt=10 dV/dt=-0.00041097

avg(ce)=1053.6199 avg(csn)=-2042.1298 avg(csp)=56207.1915 memory=45943238656 PreNewt=0.41479s MatInv t=0.072477s PostNewt t=0.0006326

updt dtso=0.024459s Calc Jac=0.33972s Calc f=0.019033s Calc gJacg=0.010247s assemble=0.021082

jacdiag=0.14403s jacce=0.044225s jacpe=0.058244s jacps=0.042307s jaccsn=0.026086s jaccsp=0.024317s

Newton method for the coupled system converged:12 , 6.8515e-07 , 1.7789e-09 , 1.3345e-11 , 5.5716e-08 , 2.7586e-07 , 1.5619e-06 , and -6.9697 , 6.3904 , 6.8515e-07

ite 510 at time 4201.5625s I=5A CVed in 12ite 0.50074s voltage=1.0943V SOCn=-0.10515 SOCp=0.025144 dt=10 dV/dt=-0.0004272

avg(ce)=1053.7283 avg(csn)=-2118.7412 avg(csp)=56304.5582 memory=45943238656 PreNewt=0.41228s MatInv t=0.071376s PostNewt t=0.0006209

updt dtso=0.024365s Calc Jac=0.33592s Calc f=0.019304s Calc gJacg=0.011328s assemble=0.021098

jacdiag=0.14225s jacce=0.046567s jacpe=0.056454s jacps=0.044232s jaccsn=0.023208s jaccsp=0.022757s

Solver ends. Estimated charge time 0

The full program takes 428.50 sec

read section 0.04 sec

solver section 410.05 sec

plot section 15.13 sec

video section 0.00 sec

write section 3.28 sec

Total time of solver setup 328.94 sec

Total time of matrix inversion 57.33 sec

Total time of solver update 0.61 sec

Total time in solver iteration 386.87 sec

With all minor updates with and da/dcs jac 20x3x20p20

ite 451 at time 4187s I=0A CVed in 10ite 0.39757s voltage=2.3481V SOCn=-0.0070683 SOCp=0.10004 dt=10 dV/dt=4.3644e-05

avg(ce)=1000.1052 avg(csn)=719.8413 avg(csp)=53268.8412 memory=46304710656 PreNewt=0.32959s MatInv=0.055044s PostNewt=0.0005283

updt dtso=0.020793s Calc Jac=0.26873s Calc f=0.01619s Calc gJacg=0.0075519s assemble=0.016154

jacdiag=0.11548s jacce=0.036029s jacpe=0.04626s jacps=0.035682s jaccsn=0.017303s jaccsp=0.017756s

Newton method for the coupled system converged:10 , 4.3947e-07 , 2.8086e-10 , 3.3621e-10 , 4.0022e-08 , 1.1969e-08 , 1.0173e-06 , and -6.2888 , 0.85454 , 4.3947e-07

ite 452 at time 4197s I=0A CVed in 10ite 0.4009s voltage=2.3484V SOCn=-0.0070711 SOCp=0.099698 dt=10 dV/dt=3.1558e-05

avg(ce)=1000.1017 avg(csn)=719.7601 avg(csp)=53282.7498 memory=46304710656 PreNewt=0.33283s MatInv=0.054168s PostNewt=0.0005324

updt dtso=0.021054s Calc Jac=0.27113s Calc f=0.016051s Calc gJacg=0.0077557s assemble=0.016634

jacdiag=0.1165s jacce=0.036865s jacpe=0.046822s jacps=0.035625s jaccsn=0.017443s jaccsp=0.01765s

Newton method for the coupled system converged:10 , 4.3038e-07 , 2.7551e-10 , 3.3054e-10 , 3.8518e-08 , 1.143e-08 , 9.9626e-07 , and -6.2889 , 0.83696 , 4.3038e-07

ite 453 at time 4207s I=0A CVed in 10ite 0.40033s voltage=2.3488V SOCn=-0.0070736 SOCp=0.099362 dt=10 dV/dt=3.866e-05

avg(ce)=1000.0984 avg(csn)=719.6879 avg(csp)=53296.3719 memory=46304710656 PreNewt=0.33181s MatInv=0.055032s PostNewt=0.0005412

updt dtso=0.021039s Calc Jac=0.27083s Calc f=0.016085s Calc gJacg=0.0076985s assemble=0.015995

jacdiag=0.1168s jacce=0.036103s jacpe=0.047006s jacps=0.035918s jaccsn=0.017304s jaccsp=0.017461s

Solver ends. Estimated charge time 3807

The full program takes 234.08 sec

read section 0.04 sec

solver section 216.82 sec

plot section 14.52 sec

video section 0.00 sec

write section 2.70 sec

Total time of solver setup 167.68 sec

Total time of matrix inversion 29.78 sec

Total time of solver update 0.28 sec

Total time in solver iteration 197.74 sec

With all minor updates with and da/dcs jac 30x3x30p20

ite 452 at time 4187.5s I=0A CVed in 10ite 0.69932s voltage=2.3302V SOCn=-0.0066253 SOCp=0.10715 dt=10 dV/dt=0.0002227

avg(ce)=1000.4636 avg(csn)=732.6628 avg(csp)=52980.7804 memory=46112878592 PreNewt=0.51609s MatInv=0.15656s PostNewt=0.0006175

updt dtso=0.029582s Calc Jac=0.40288s Calc f=0.023923s Calc gJacg=0.01486s assemble=0.044585

jacdiag=0.17927s jacce=0.052004s jacpe=0.066561s jacps=0.053929s jaccsn=0.02533s jaccsp=0.025445s

Newton method for the coupled system converged:10 , 5.1174e-07 , 5.3811e-10 , 6.6254e-10 , 9.6885e-08 , 7.951e-08 , 1.1794e-06 , and -6.2868 , 0.99047 , 5.1174e-07

ite 453 at time 4197.5s I=0A CVed in 10ite 0.75204s voltage=2.3325V SOCn=-0.0066787 SOCp=0.10667 dt=10 dV/dt=0.00023439

avg(ce)=1000.4157 avg(csn)=731.1178 avg(csp)=53000.1388 memory=46112878592 PreNewt=0.53501s MatInv=0.18956s PostNewt=0.0006597

updt dtso=0.029786s Calc Jac=0.41757s Calc f=0.024899s Calc gJacg=0.016098s assemble=0.046357

jacdiag=0.18624s jacce=0.054662s jacpe=0.070483s jacps=0.054091s jaccsn=0.026345s jaccsp=0.025377s

Newton method for the coupled system converged:10 , 4.9706e-07 , 4.3087e-10 , 5.2541e-10 , 7.9256e-08 , 6.7305e-08 , 1.1462e-06 , and -6.2891 , 0.96728 , 4.9706e-07

ite 454 at time 4207.5s I=0A CVed in 10ite 0.74725s voltage=2.3342V SOCn=-0.0067254 SOCp=0.1062 dt=10 dV/dt=0.00016205

avg(ce)=1000.3778 avg(csn)=729.7667 avg(csp)=53019.1323 memory=46112878592 PreNewt=0.54175s MatInv=0.17677s PostNewt=0.0006719

updt dtso=0.030917s Calc Jac=0.42682s Calc f=0.024499s Calc gJacg=0.015038s assemble=0.044187

jacdiag=0.18878s jacce=0.055324s jacpe=0.0721s jacps=0.055272s jaccsn=0.027142s jaccsp=0.027683s

Solver ends. Estimated charge time 3997.5

The full program takes 384.19 sec

read section 0.08 sec

solver section 365.41 sec

plot section 15.10 sec

video section 0.00 sec

write section 3.61 sec

Total time of solver setup 259.30 sec

Total time of matrix inversion 80.07 sec

Total time of solver update 0.32 sec

Total time in solver iteration 339.69 sec

full

ite 82 at time 820s I=5A CVed in 11ite 0.46575s voltage=-0.14963V SOCn=0.79084 SOCp=0.83374 dt=10 dV/dt=9.34e-06

avg(ce)=1038.3156 avg(csn)=23812.7669 avg(csp)=23530.7388 memory=5673869312 PreNewt=0.39226s MatInv=0.061085s PostNewt=0.0006379

updt dtso=0.021812s Calc Jac=0.32288s Calc f=0.021651s Calc gJacg=0.006862s assemble=0.018842

jacdiag=0.13948s jacce=0.043547s jacpe=0.059756s jacps=0.045279s jaccsn=0.016867s jaccsp=0.017758s

jaccedce=0.025442 jacpedpe=0.021015s jacpsdps=0.019712s jaccsdcs=0.073148s total=0.13932

sparse

ite 82 at time 820s I=5A CVed in 11ite 0.43287s voltage=-0.14963V SOCn=0.79084 SOCp=0.83374 dt=10 dV/dt=9.34e-06

avg(ce)=1038.3156 avg(csn)=23812.7669 avg(csp)=23530.7388 memory=5674029056 PreNewt=0.40656s MatInv=0.015394s PostNewt=0.0006561

updt dtso=0.021227s Calc Jac=0.3293s Calc f=0.021393s Calc gJacg=0.0063892s assemble=0.028014

jacdiag=0.14182s jacce=0.044458s jacpe=0.061878s jacps=0.045252s jaccsn=0.018018s jaccsp=0.017674s

jaccedce=0.025359 jacpedpe=0.021563s jacpsdps=0.020376s jaccsdcs=0.074338s total=0.14164

ite 82 at time 820s I=5A CVed in 11ite 0.47311s voltage=-0.14963V SOCn=0.79084 SOCp=0.83374 dt=10 dV/dt=9.34e-06

avg(ce)=1038.3156 avg(csn)=23812.7669 avg(csp)=23530.7388 memory=5675995136 PreNewt=0.44666s MatInv=0.015648s PostNewt=0.0006571

updt dtso=0.021875s Calc Jac=0.35608s Calc f=0.021664s Calc gJacg=0.01786s assemble=0.028938

jacdiag=0.16459s jacce=0.045889s jacpe=0.061514s jacps=0.04755s jaccsn=0.017348s jaccsp=0.018955s

jaccedce=0.026032 jacpedpe=0.021998s jacpsdps=0.021191s jaccsdcs=0.095191s total=0.16441

ite 82 at time 820s I=5A CVed in 11ite 0.42628s voltage=-0.14963V SOCn=0.79084 SOCp=0.83374 dt=10 dV/dt=9.34e-06

avg(ce)=1038.3156 avg(csn)=23812.7669 avg(csp)=23530.7388 memory=5721907200 PreNewt=0.40009s MatInv=0.015372s PostNewt=0.0006491

updt dtso=0.021018s Calc Jac=0.32516s Calc f=0.021541s Calc gJacg=0.0066407s assemble=0.025497

jacdiag=0.14015s jacce=0.044713s jacpe=0.059802s jacps=0.045512s jaccsn=0.0174s jaccsp=0.017365s

jaccedce=0.025219 jacpedpe=0.021479s jacpsdps=0.019749s jaccsdcs=0.07352s total=0.13997