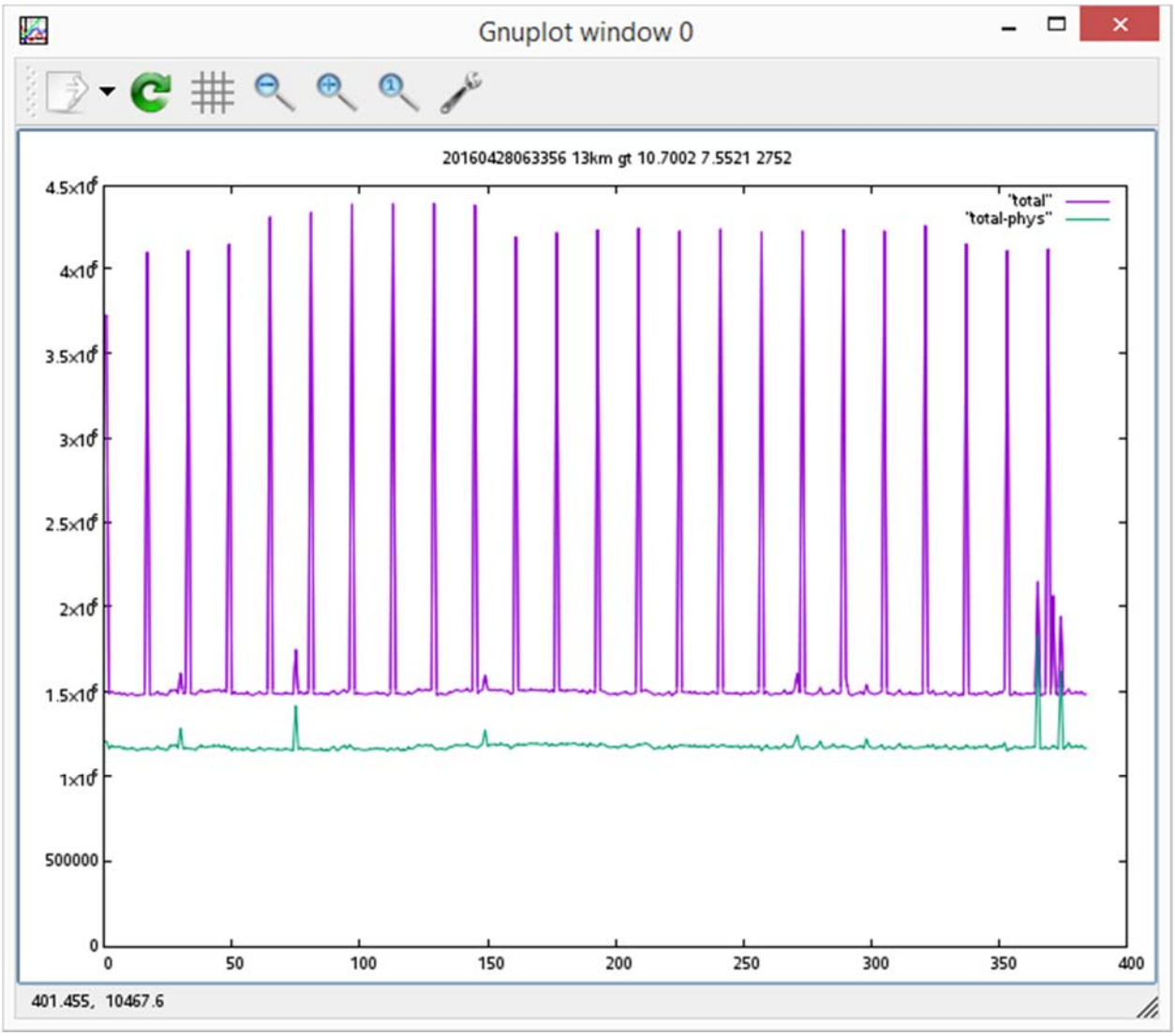
ADJUSTED

AVEC Phase-2 Benchmarks 20160428

The results in this version of the results have been adjusted so that variation in the “dynamics” is no greater than 0.5 times the standard deviation in the “total-phys” time series for each run. The idea is to compensate for variability we still saw in some of the runs, which is justified because in testing the run-to-run pattern of variation in the dynamics changes. The plots that have been adjusted have “clipped=0.5*stdev” in their titles.

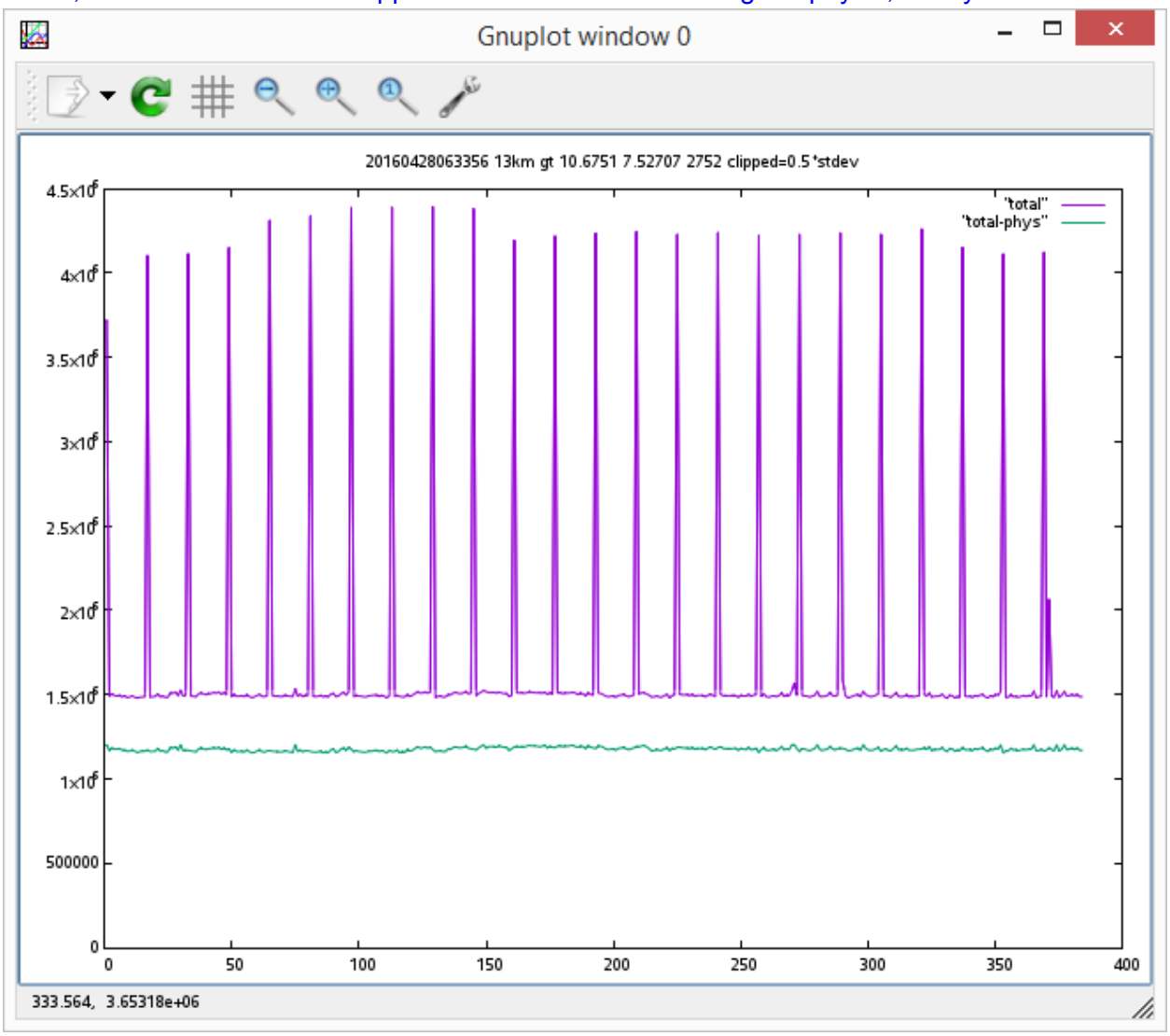
For the original unadjusted results, see
http://www.esrl.noaa.gov/gsd/ato/AVECPhase-2Benchmarks20160428_raw_notes.pdf

MPAS: job id 2035255 13km_gt:

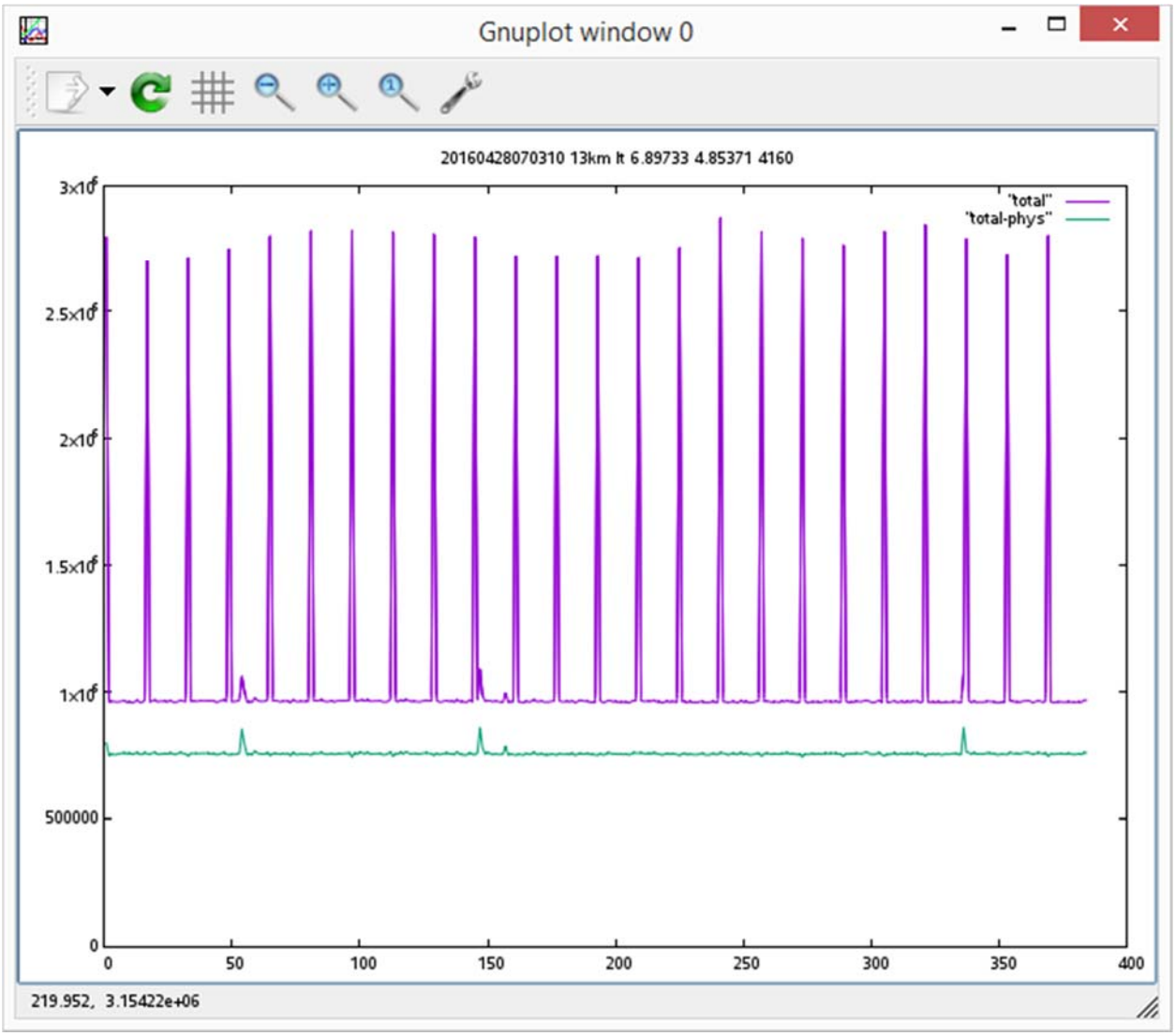


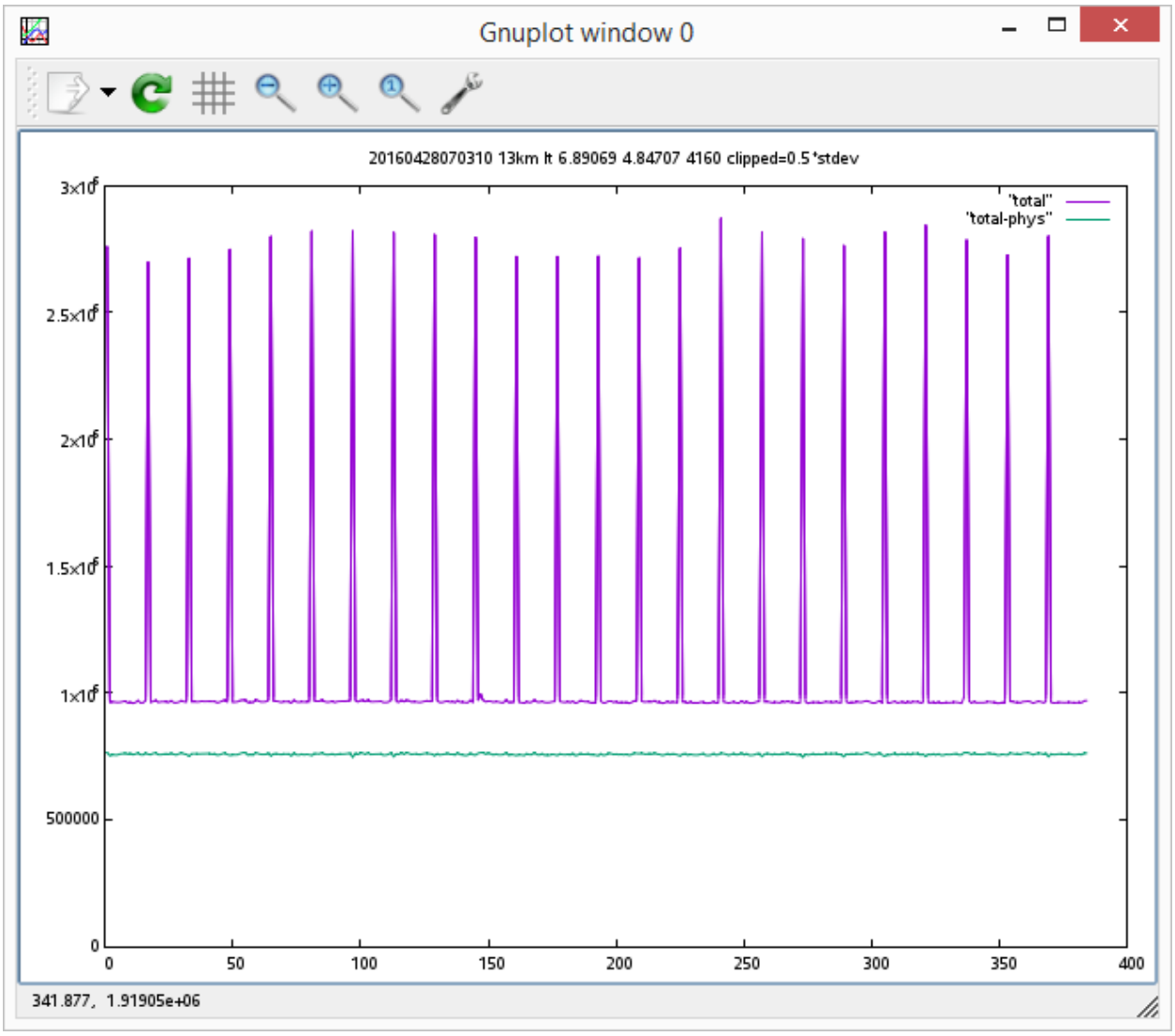
The adjusted or “clipped” version is below. Note that there’s still a bump in the time series for

“total”, since that disturbance appears to have occurred during the physic, not dynamics.

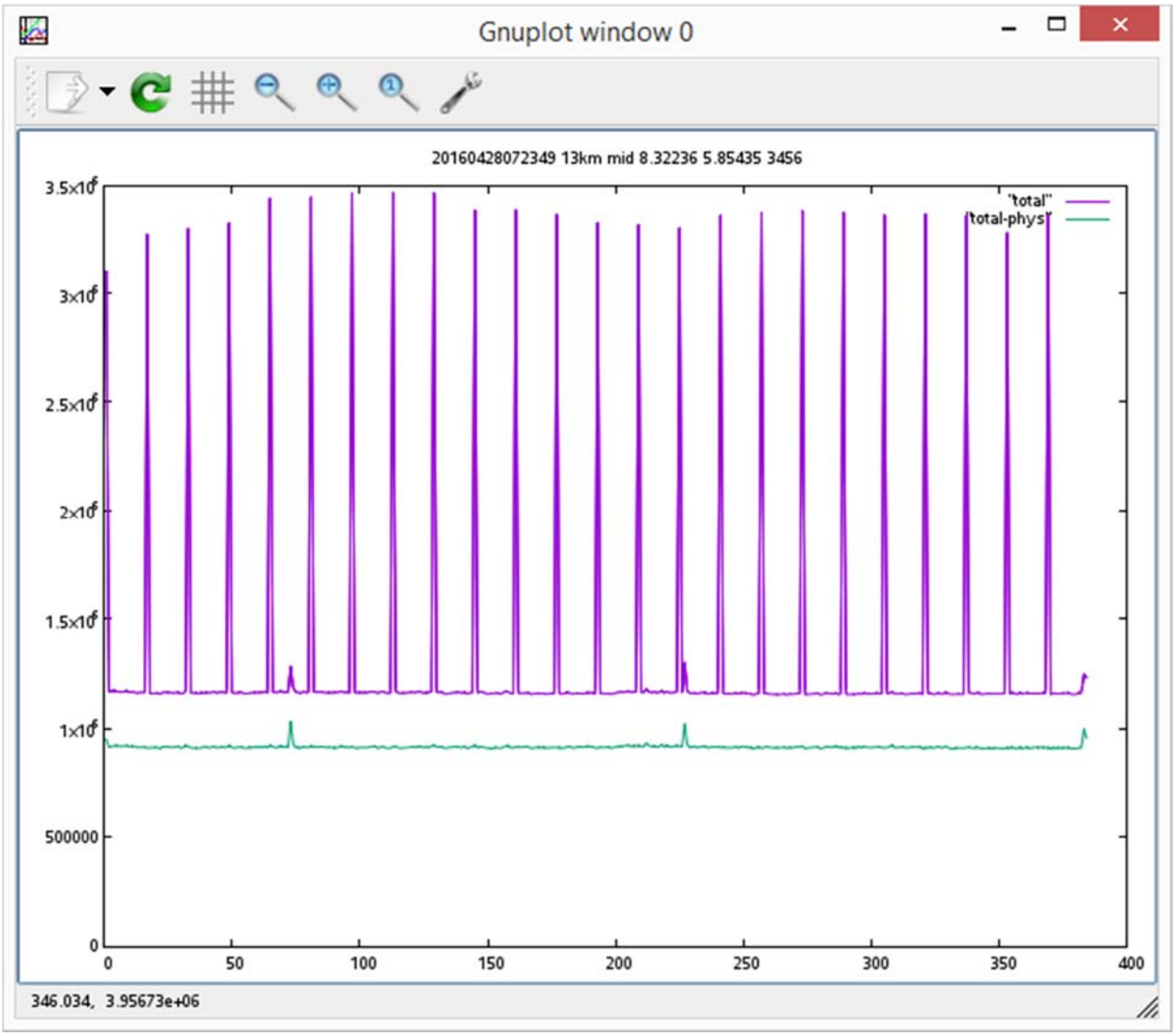


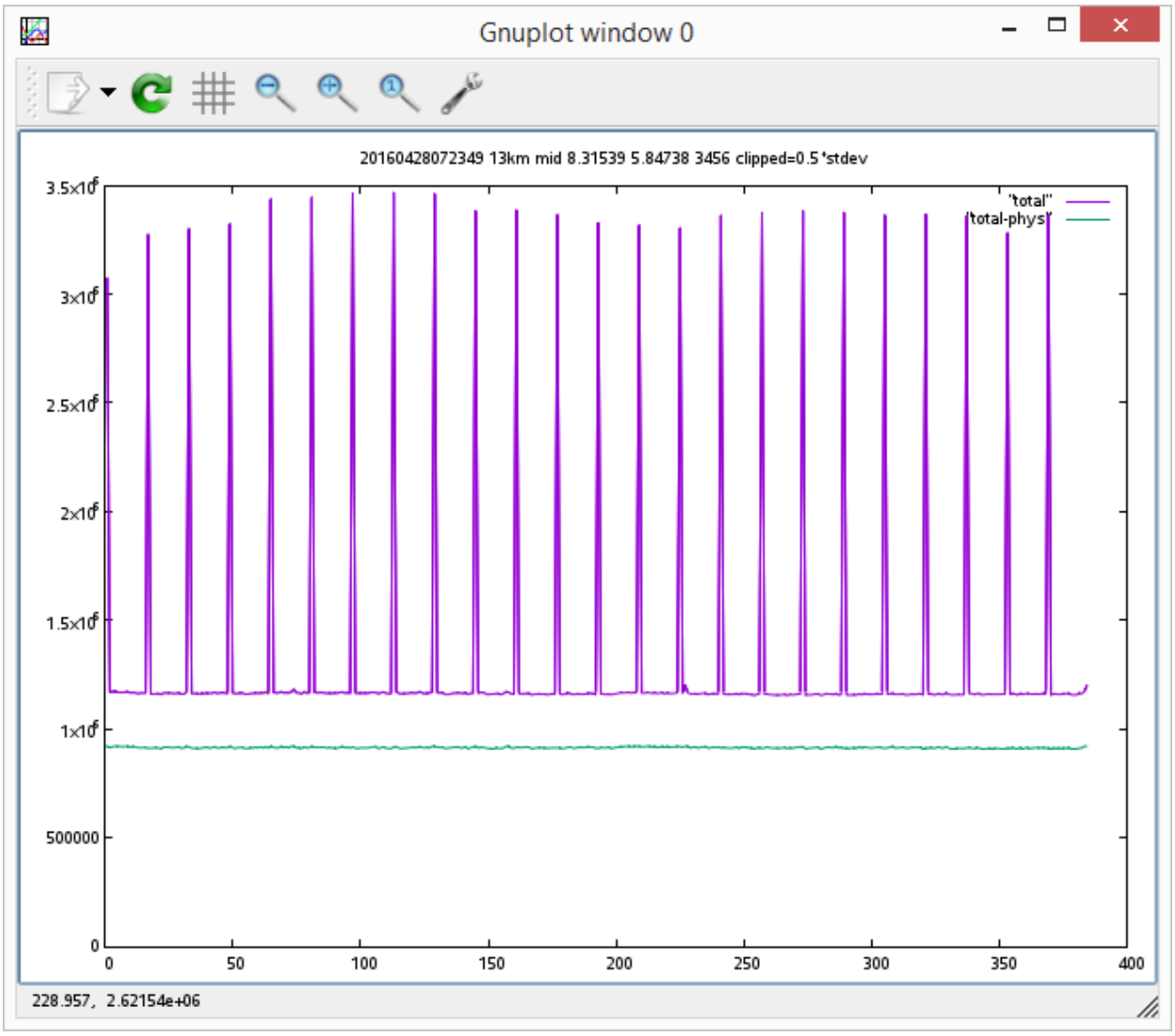
MPAS: job id 2035257 13km_lt:


Gnuplot window 0
20160428070310 13km lt 6.89733 4.85371 4160
"total"
"total-phys"
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
219.952, 3.15422e+06

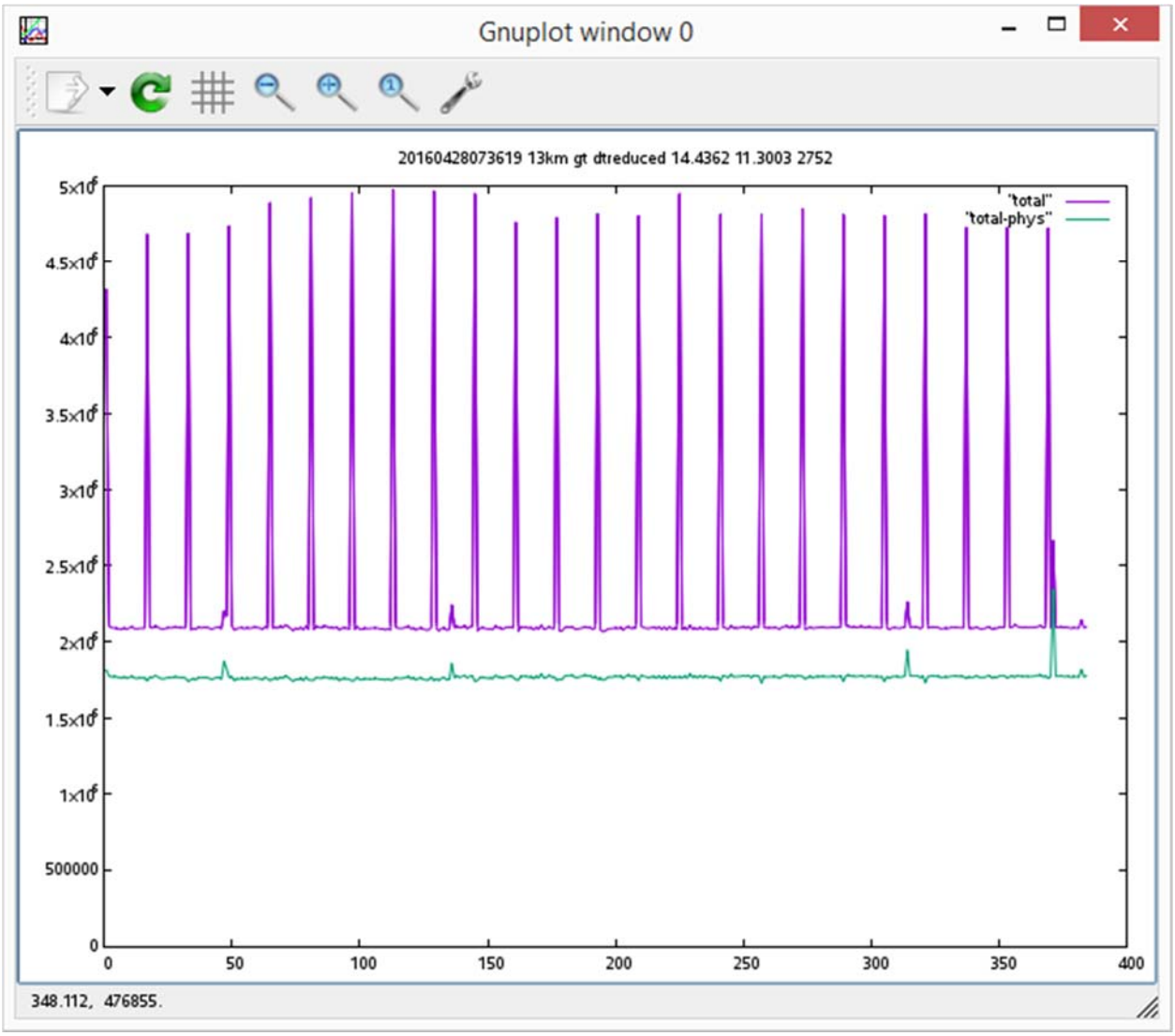


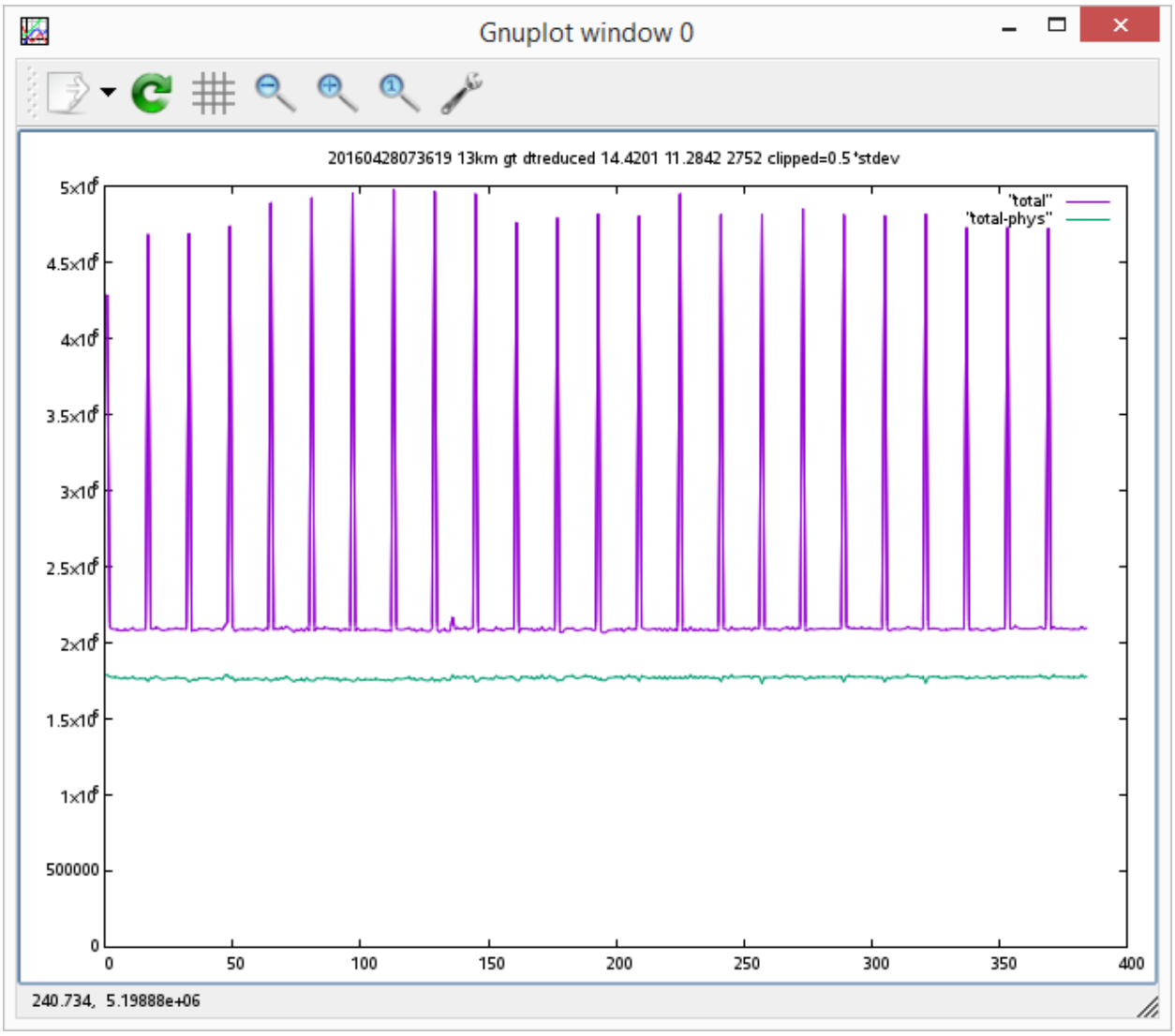
MPAS: job id 2035259 13km_mid:


Gnuplot window 0
20160428072349 13km mid 8.32236 5.85435 3456
"total"
"total-phys"
3.5x10^6
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
346.034, 3.95673e+06

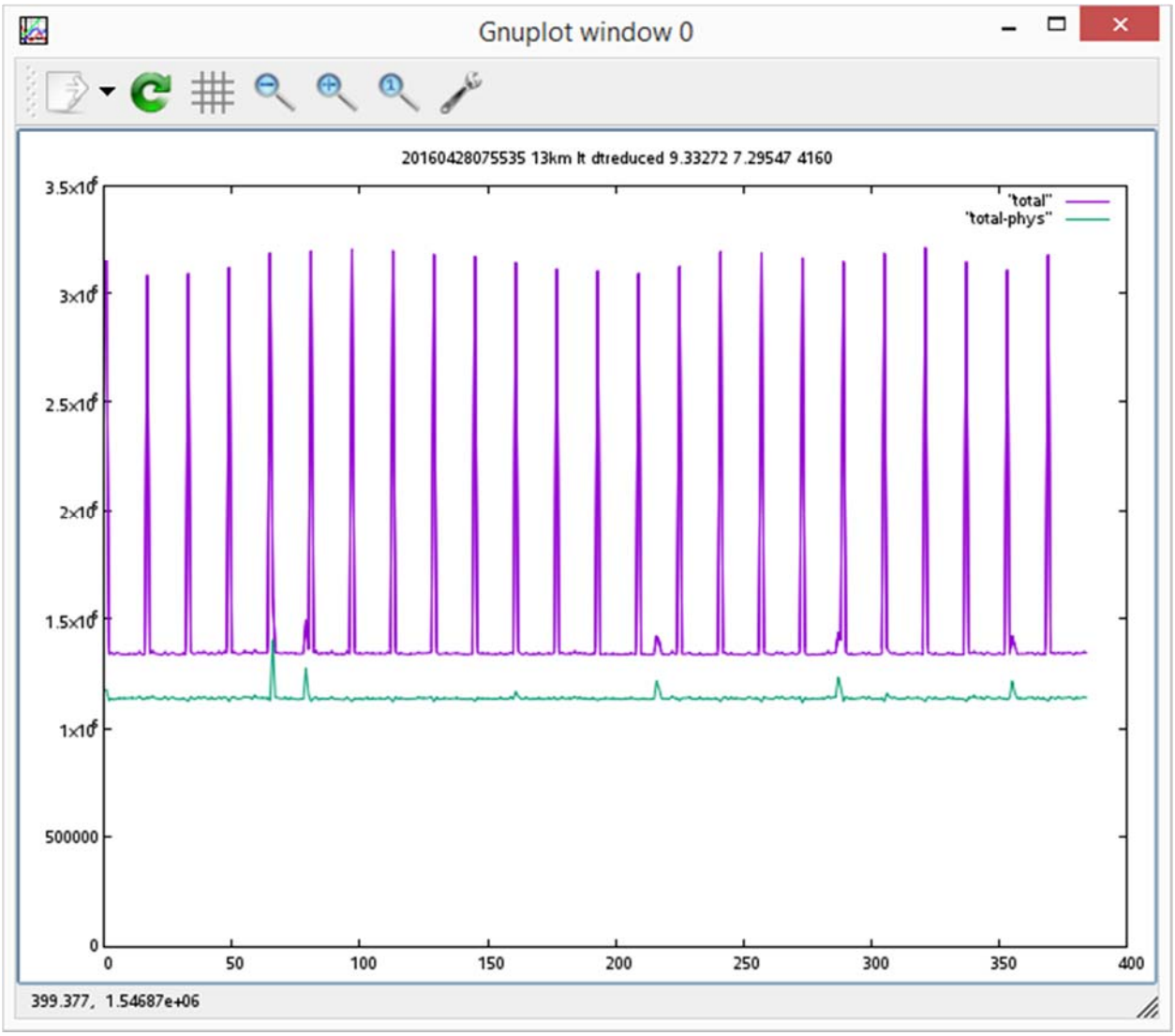


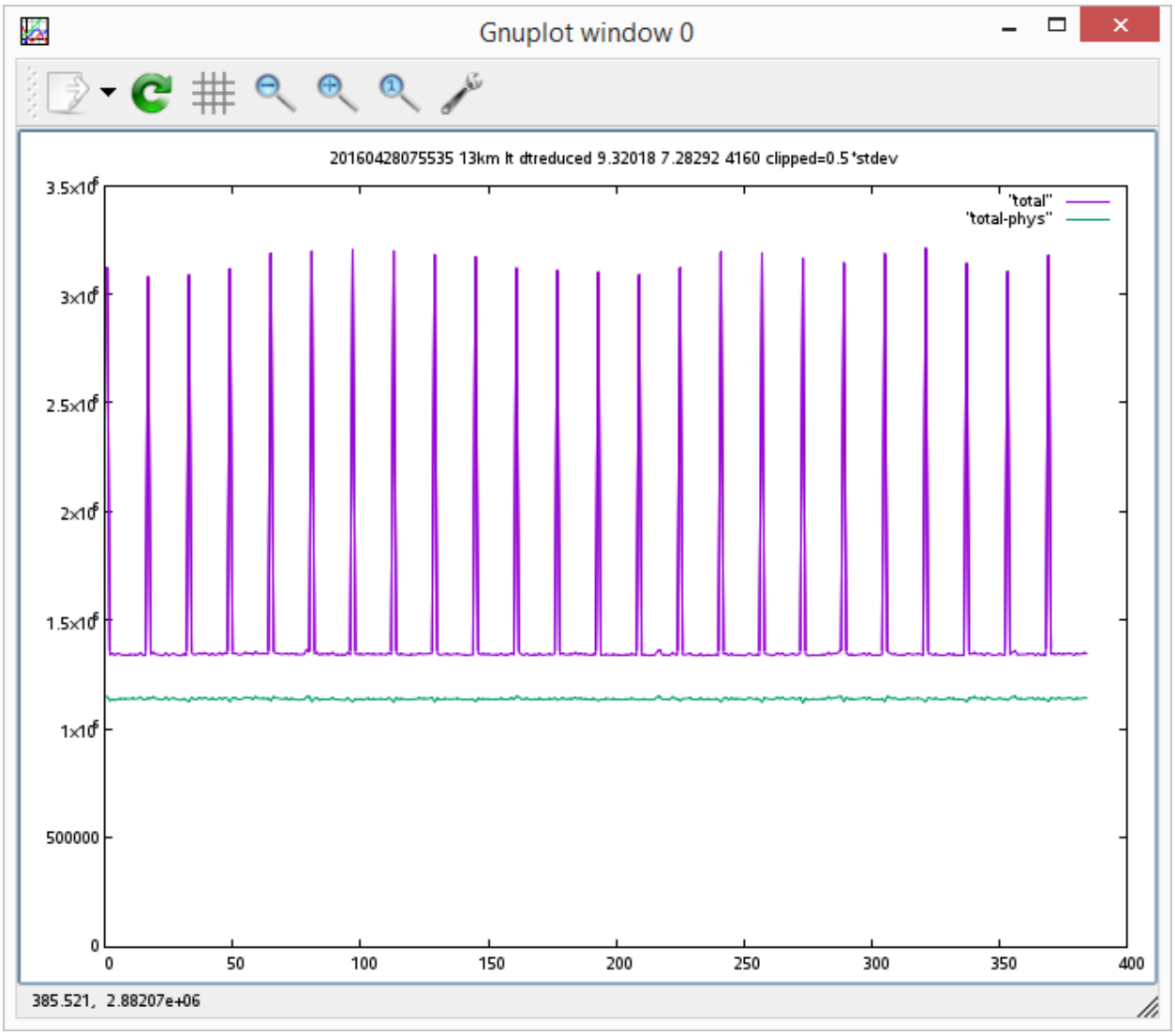
MPAS: Job ID: 2035260 13km_gt dtreduced:


Gnuplot window 0
20160428073619 13km gt dtreduced 14.4362 11.3003 2752
"total"
"total-phys"
5x10
4.5x10
4x10
3.5x10
3x10
2.5x10
2x10
1.5x10
1x10
500000
0
0
50
100
150
200
250
300
350
400
348.112, 476855.

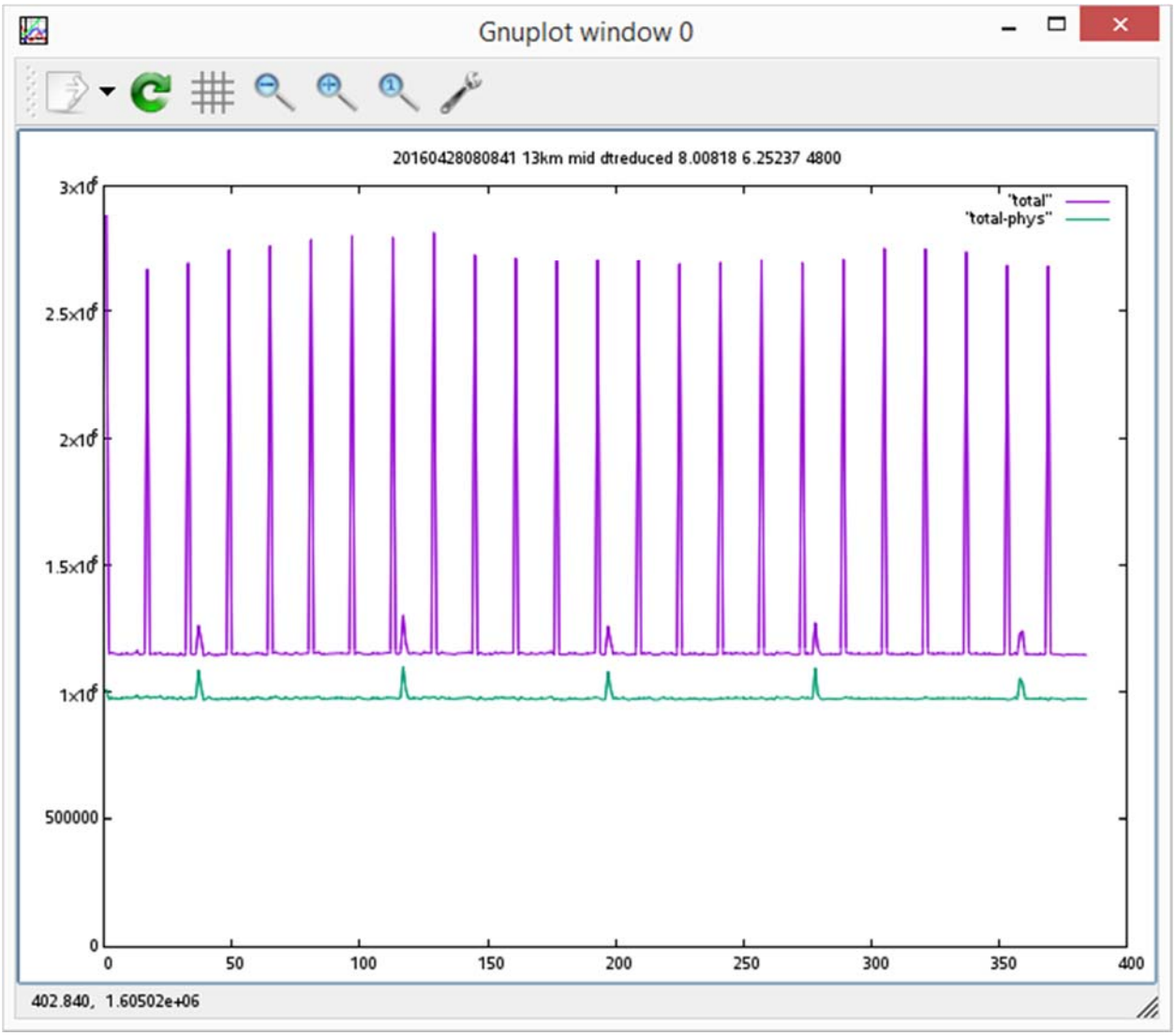


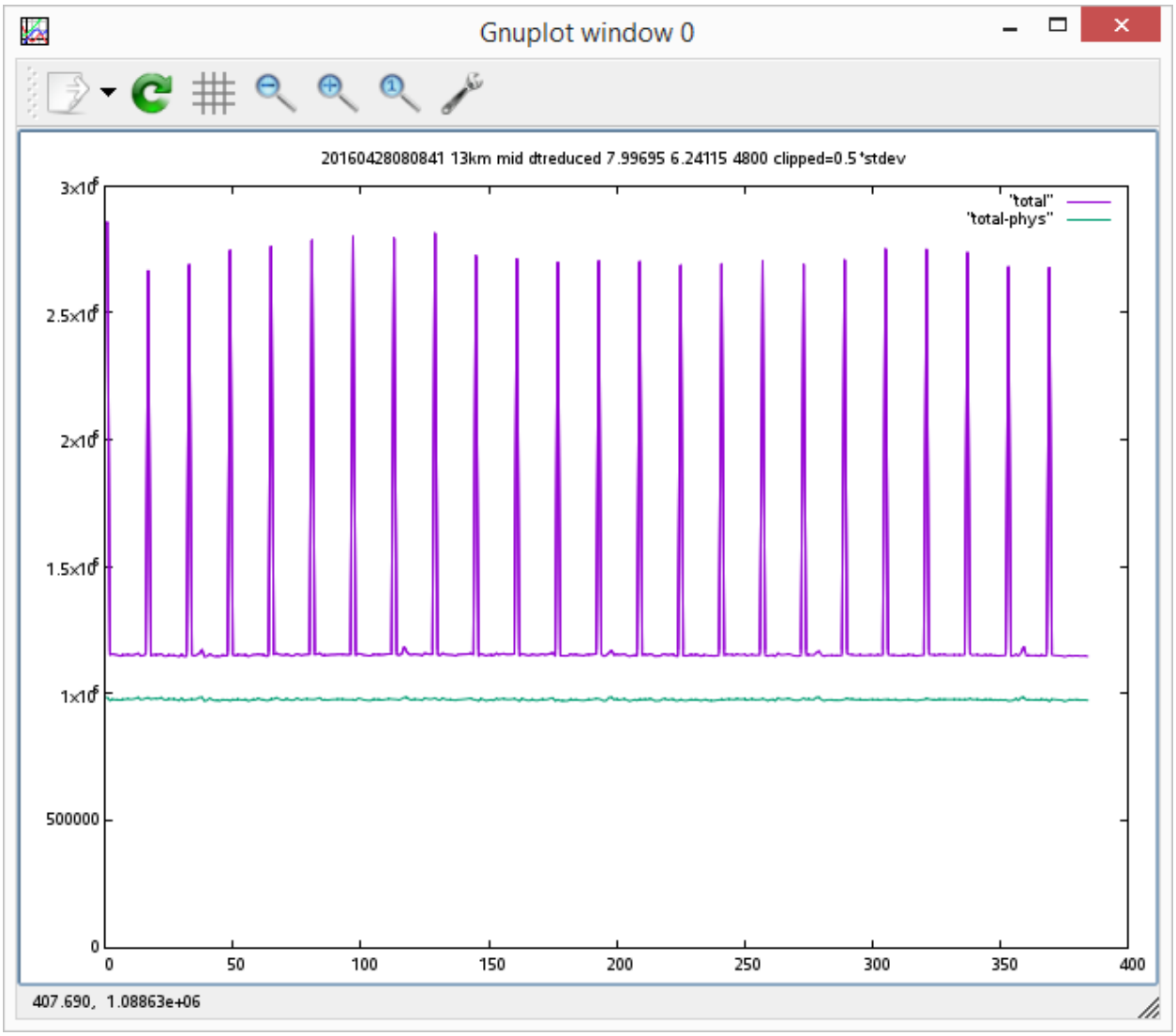
MPAS: Job ID: 2035261 13km_lt dtreduced:


Gnuplot window 0
20160428075535 13km lt dtreduced 9.33272 7.29547 4160
"total"
"total-phys"
3.5x10^6
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
399.377, 1.54687e+06

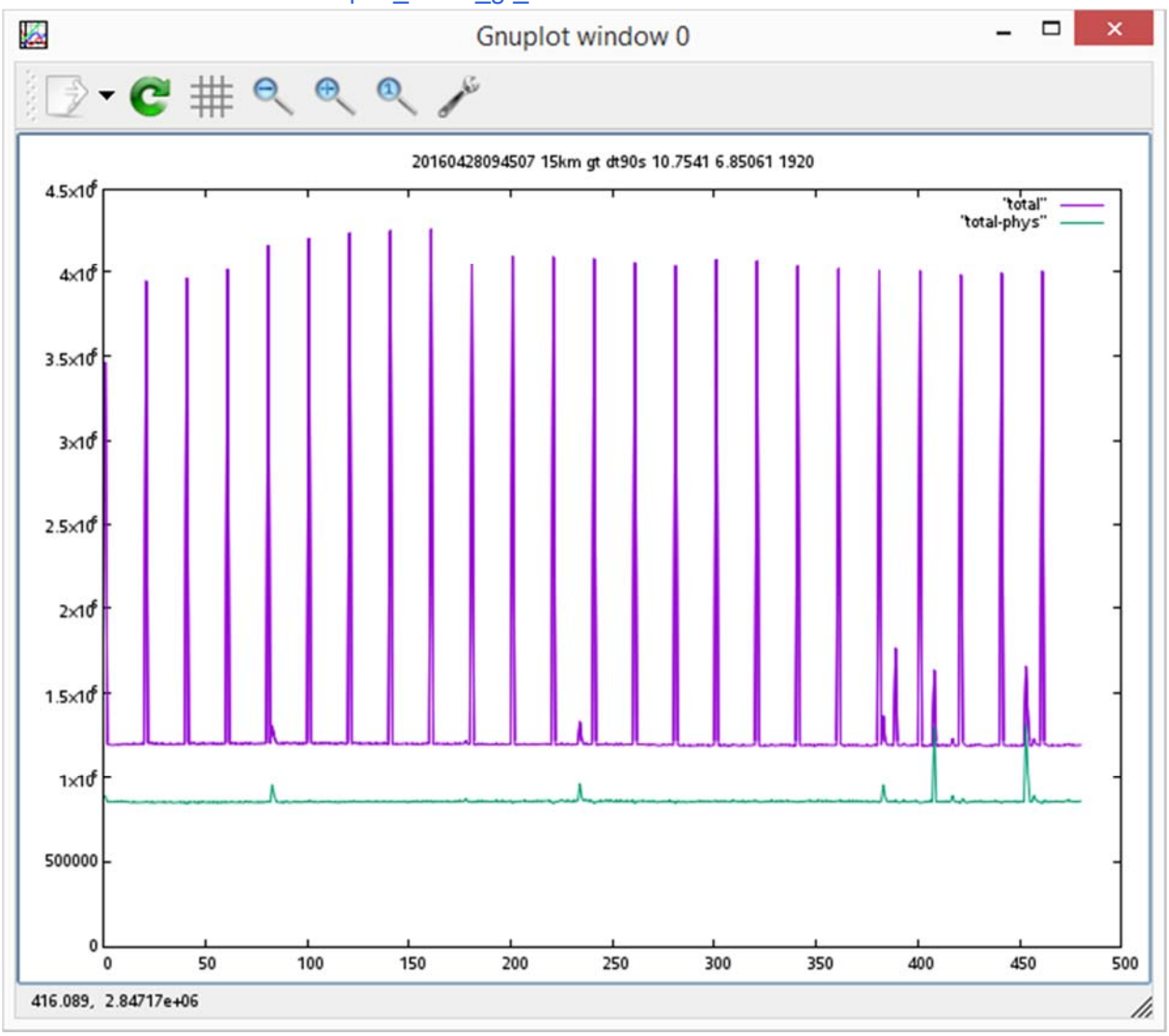


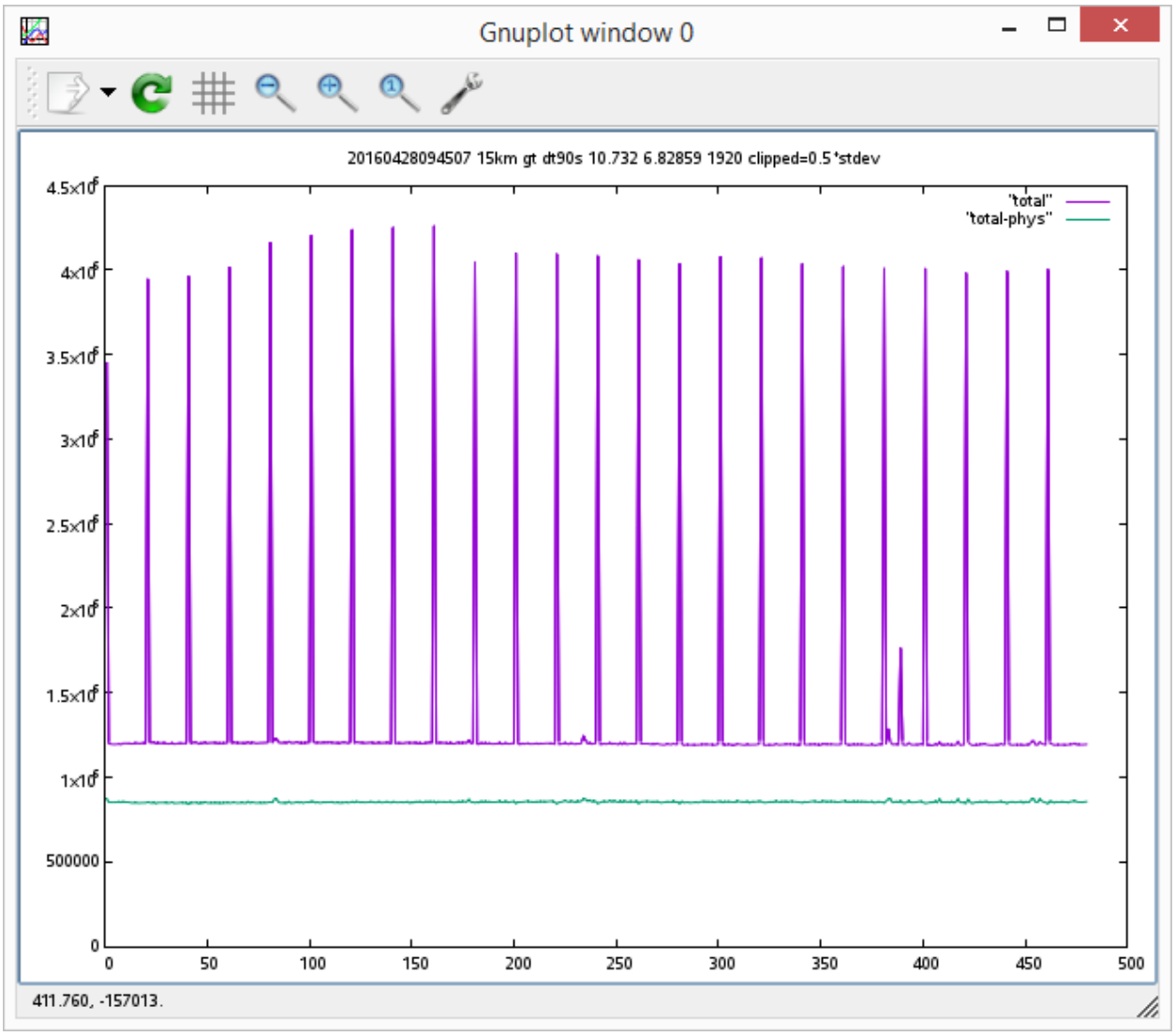
MPAS: Job ID: 2035262 13km_mid dtreduced:


Gnuplot window 0
20160428080841 13km mid dtreduced 8.00818 6.25237 4800
"total"
"total-phys"
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
402.840, 1.60502e+06

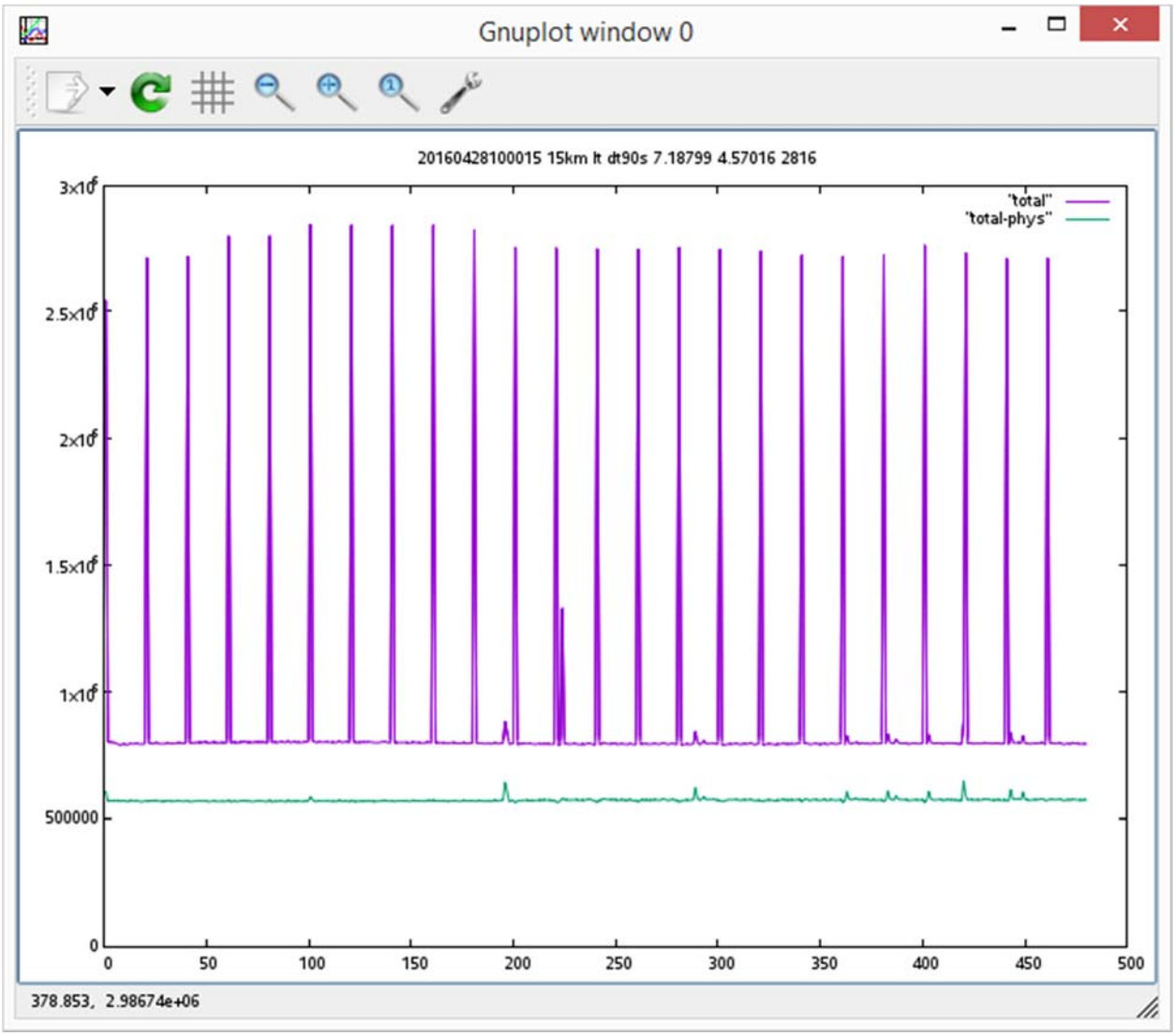

Gnuplot window 0
20160428080841 13km mid dtreduced 7.99695 6.24115 4800 clipped=0.5*stdev
'total'
'total-phys'
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
407.690, 1.08863e+06

MPAS: Job ID 2036014 .mpas_15km_gt_dt90s

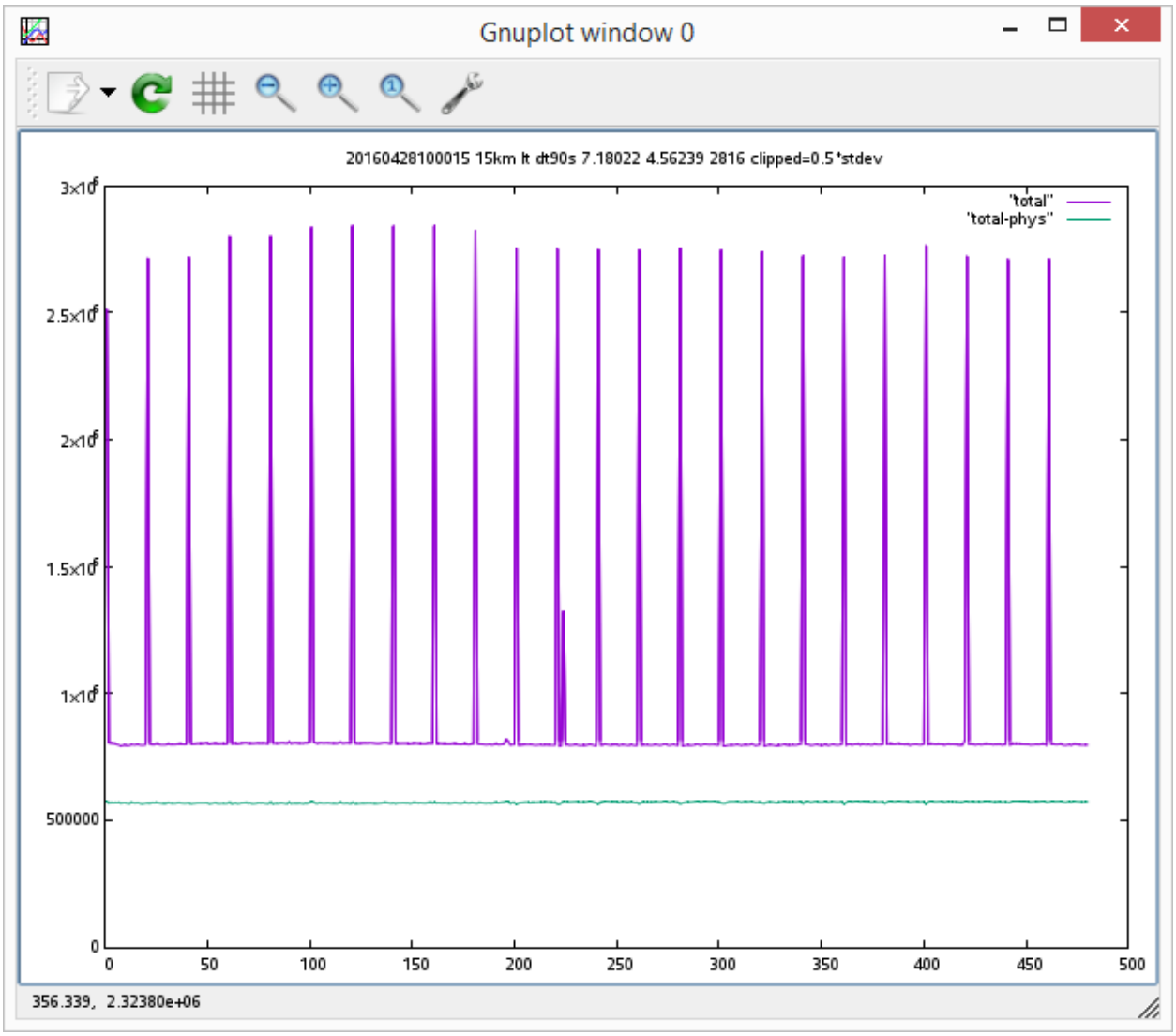




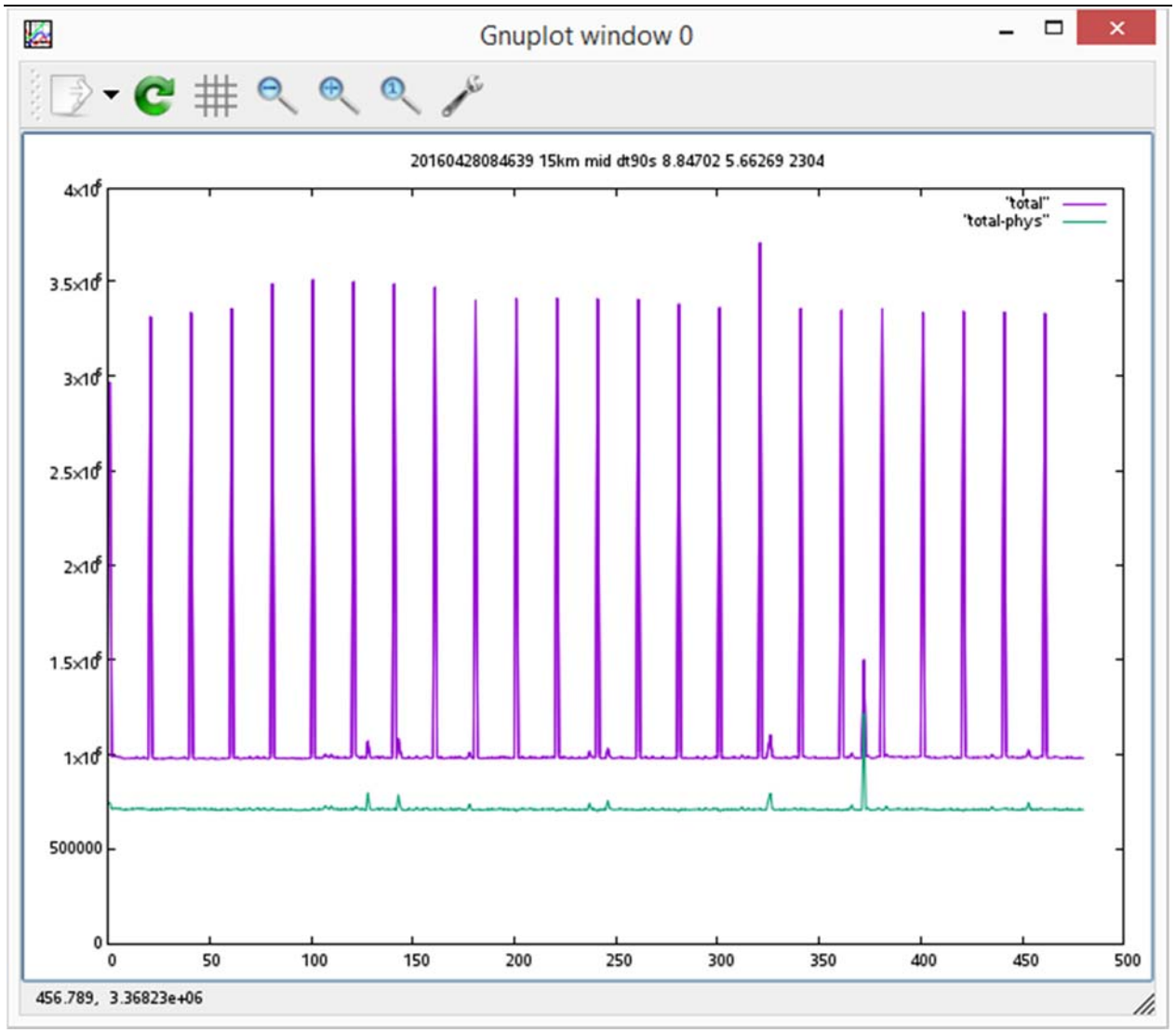
MPAS: Job ID 2036015 .mpas_15km_lt_dt90s:

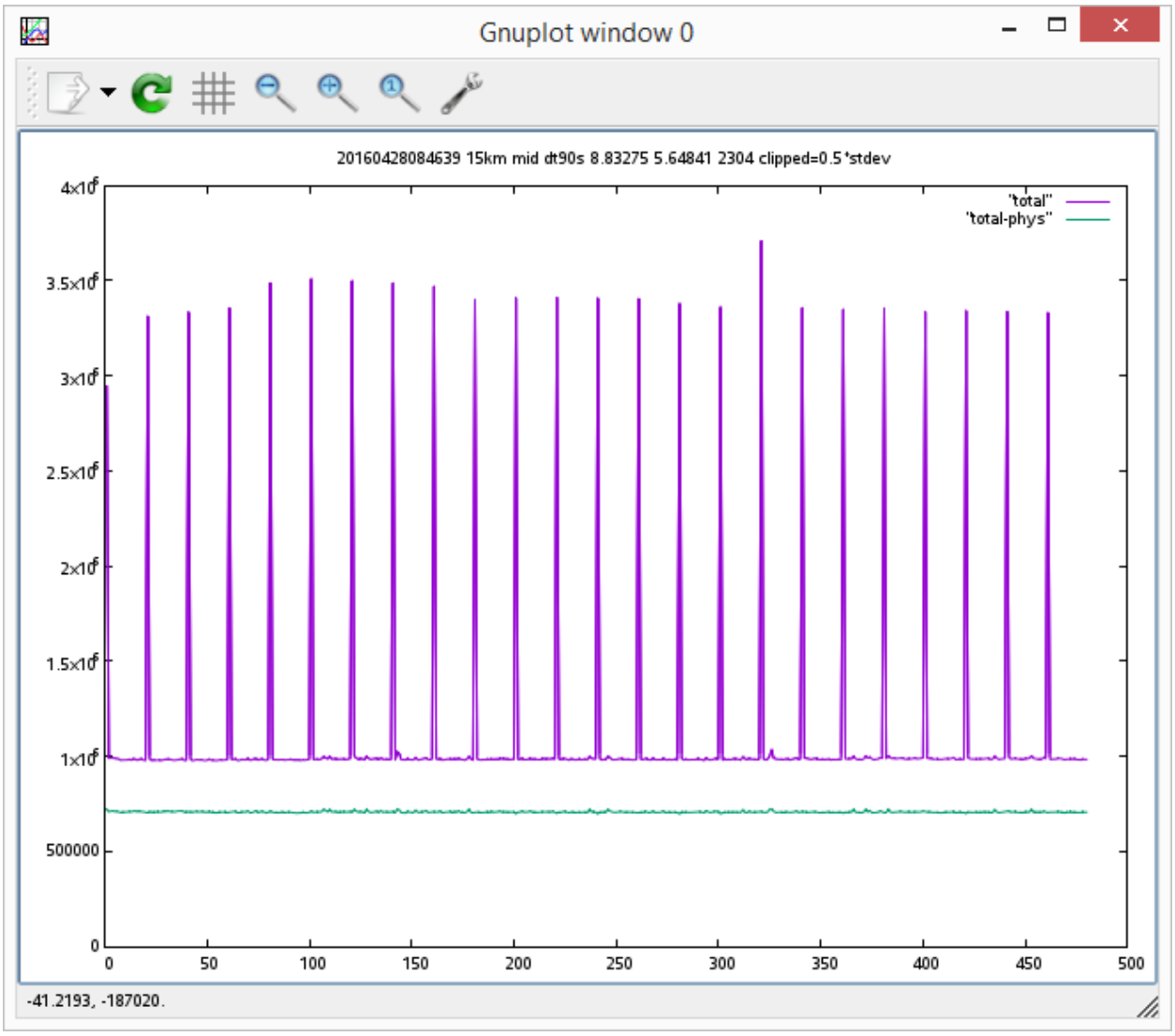


Here, again, the bump that remains after clipping appears to have happened during physics.

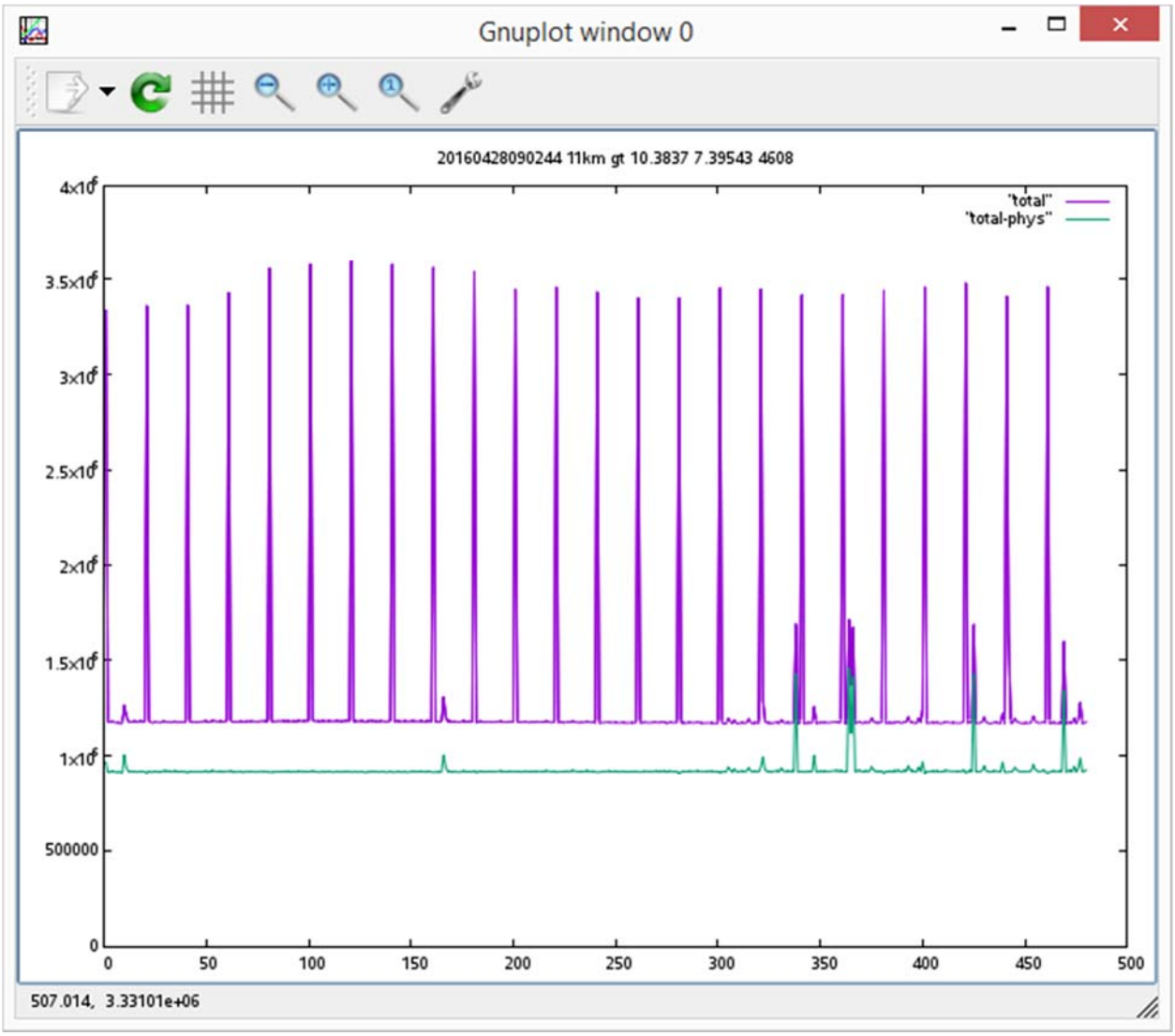


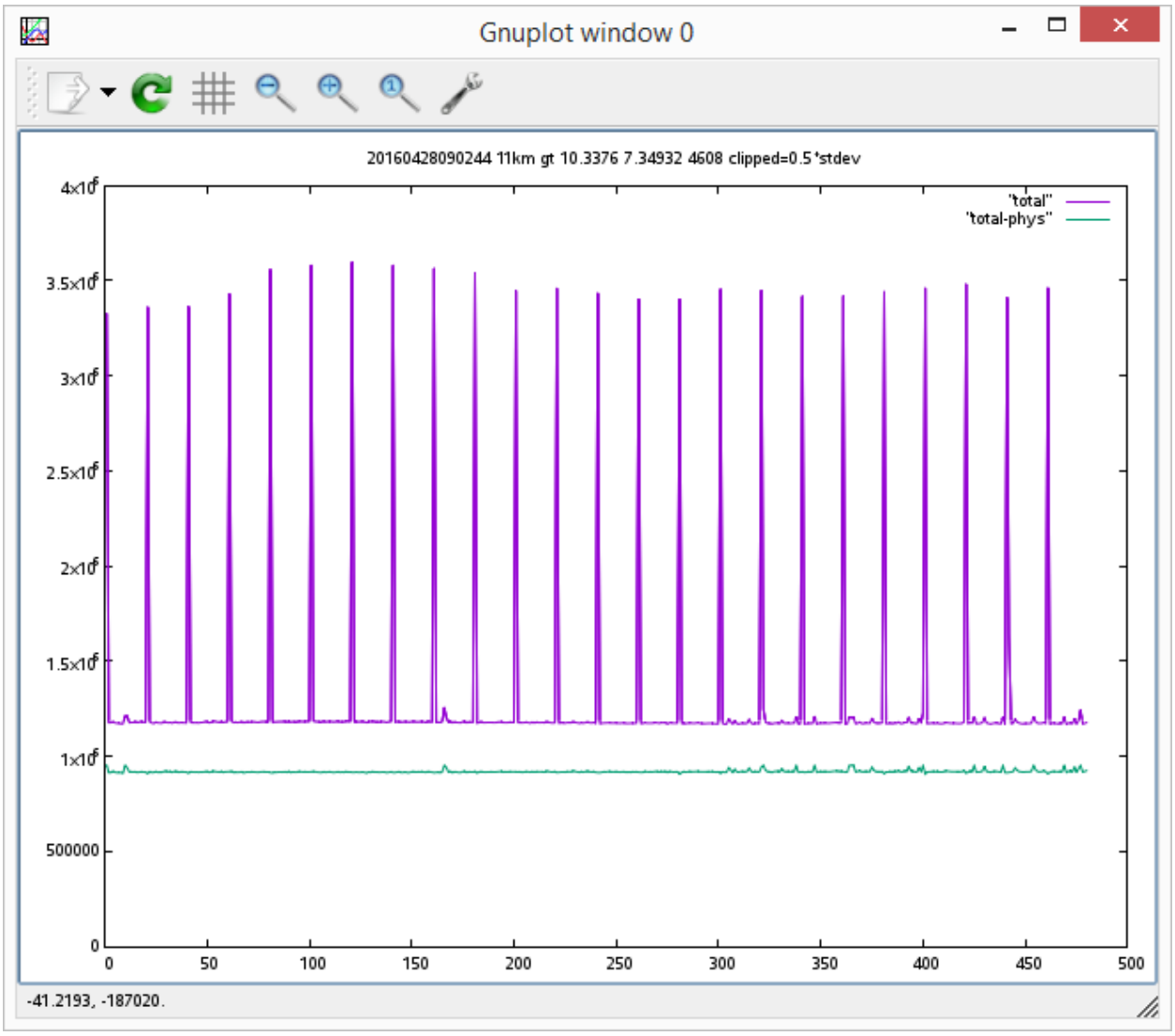
MPAS: Job ID 2035867 .mpas_15km_mid_dt90s


Gnuplot window 0
20160428084639 15km mid dt90s 8.84702 5.66269 2304
'total'
'total-phys'
4x10^6
3.5x10^6
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
450
500
456.789, 3.36823e+06

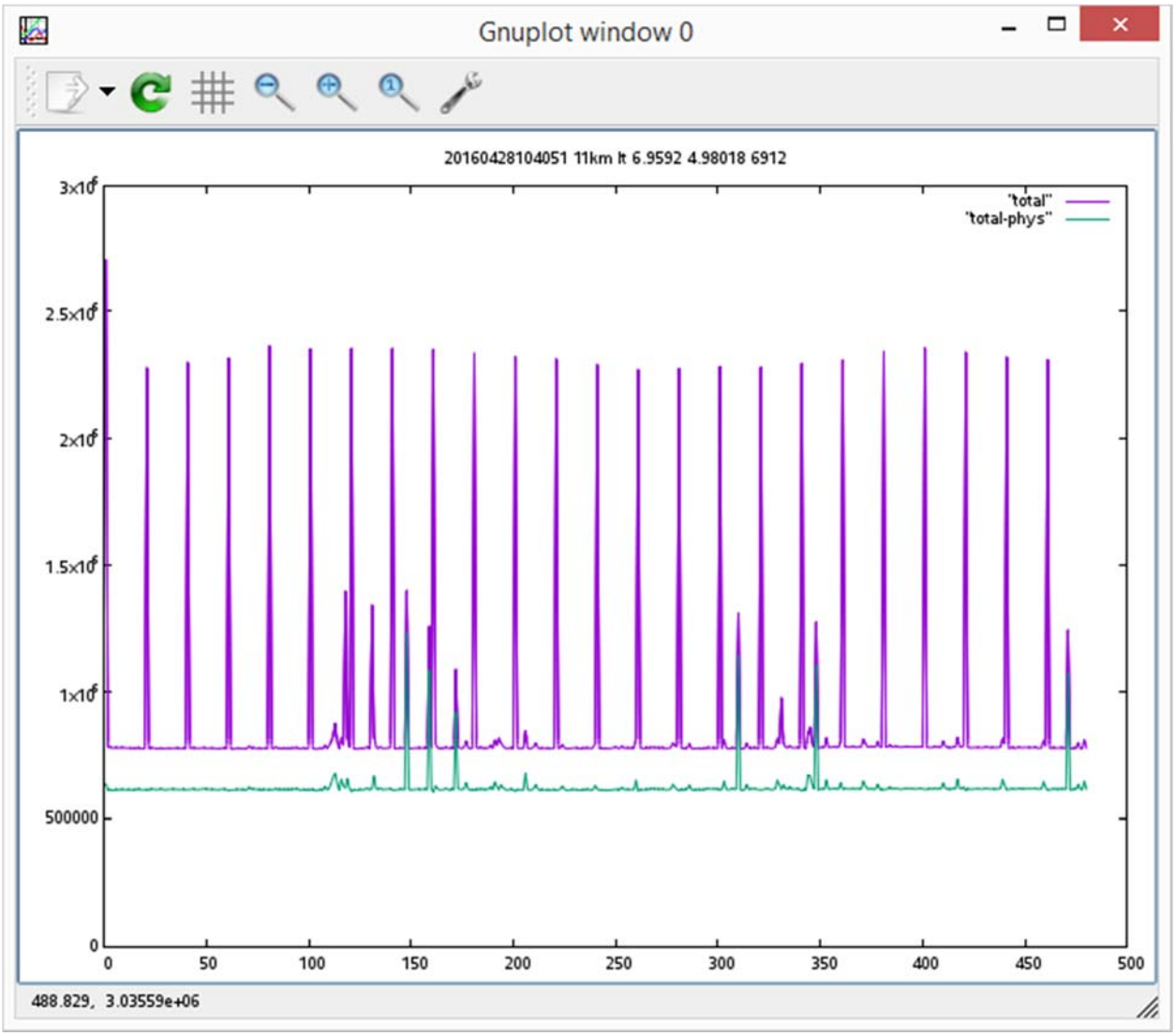


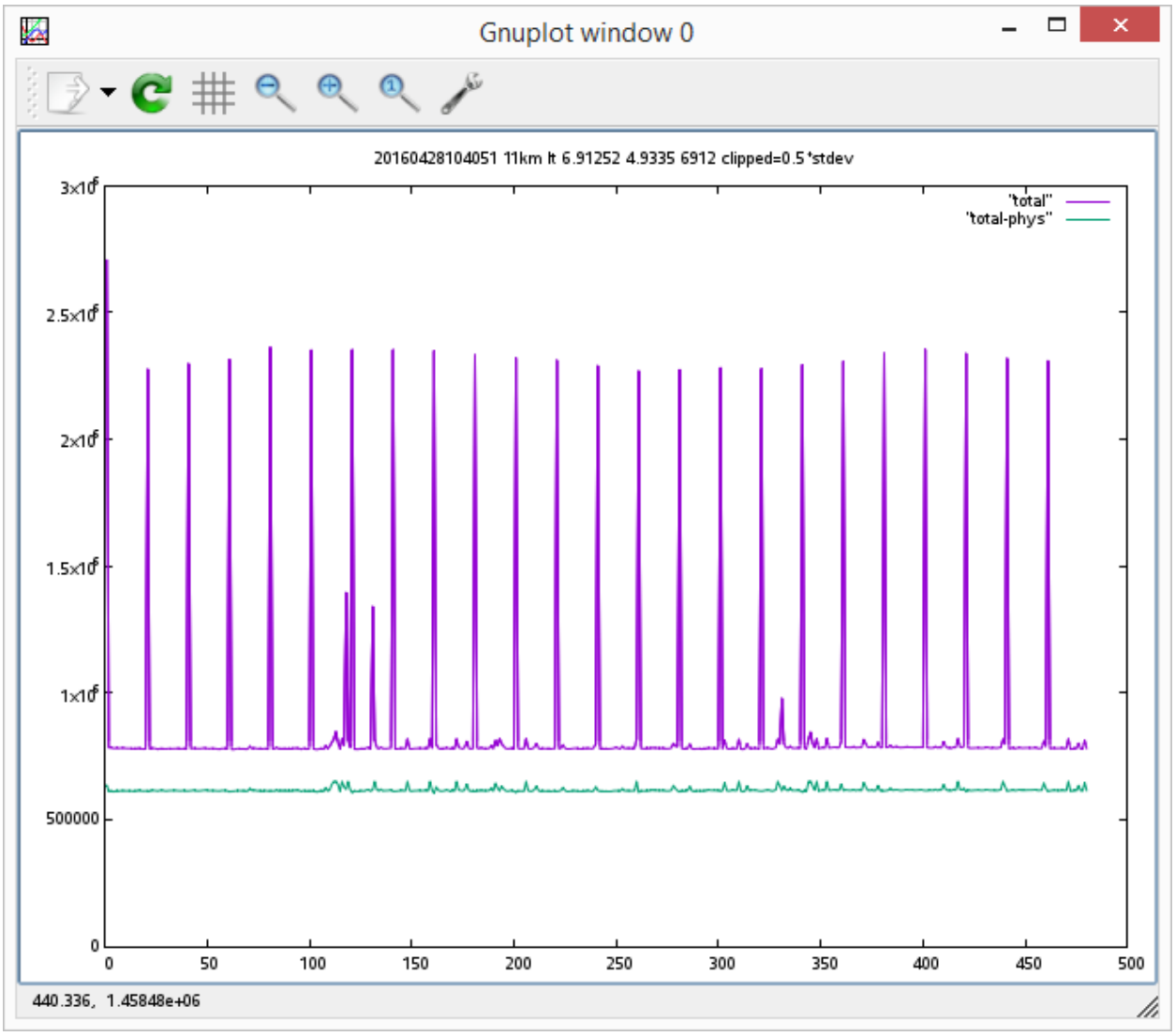
MPAS 11km gt --- noise at the end because another of our jobs started when it shouldn't have. Will rerun


Gnuplot window 0
20160428090244 11km gt 10.3837 7.39543 4608
"total"
"total-phys"
4x10^6
3.5x10^6
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
450
500
507.014, 3.33101e+06

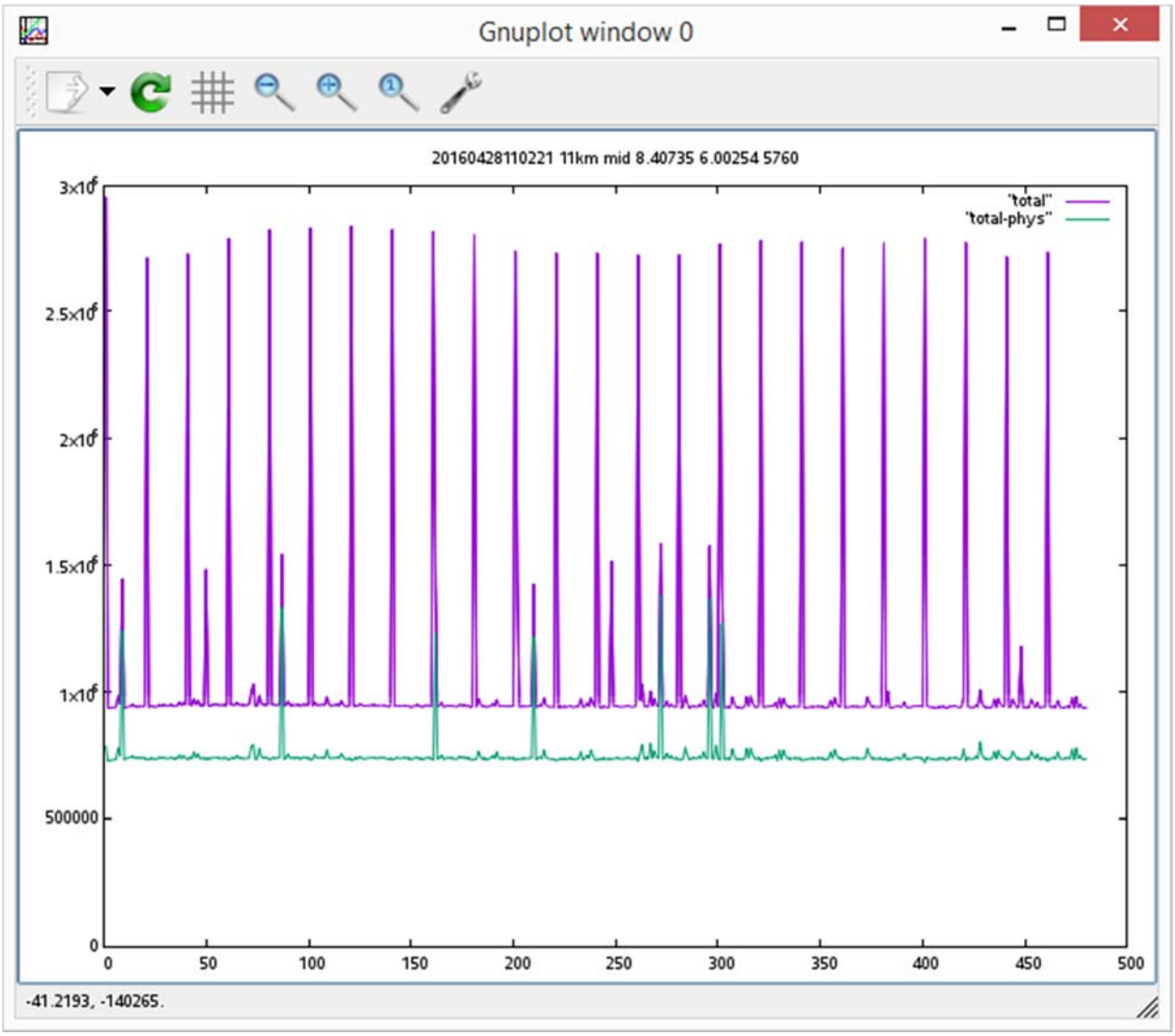


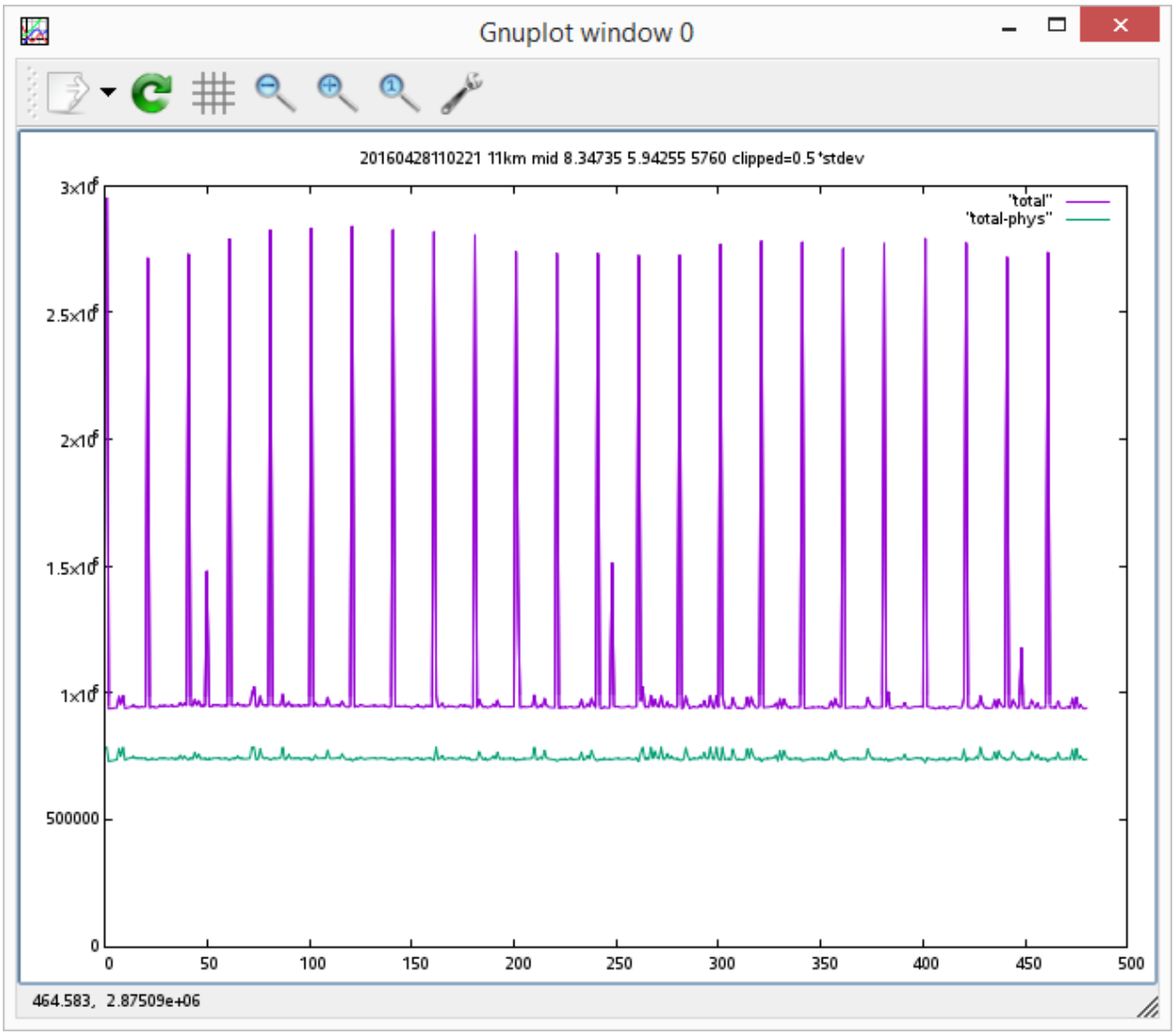
MPAS: Job ID 2036018 11km lt:


Gnuplot window 0
20160428104051 11km lt 6.9592 4.98018 6912
"total"
"total-phys"
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
450
500
488.829, 3.03559e+06

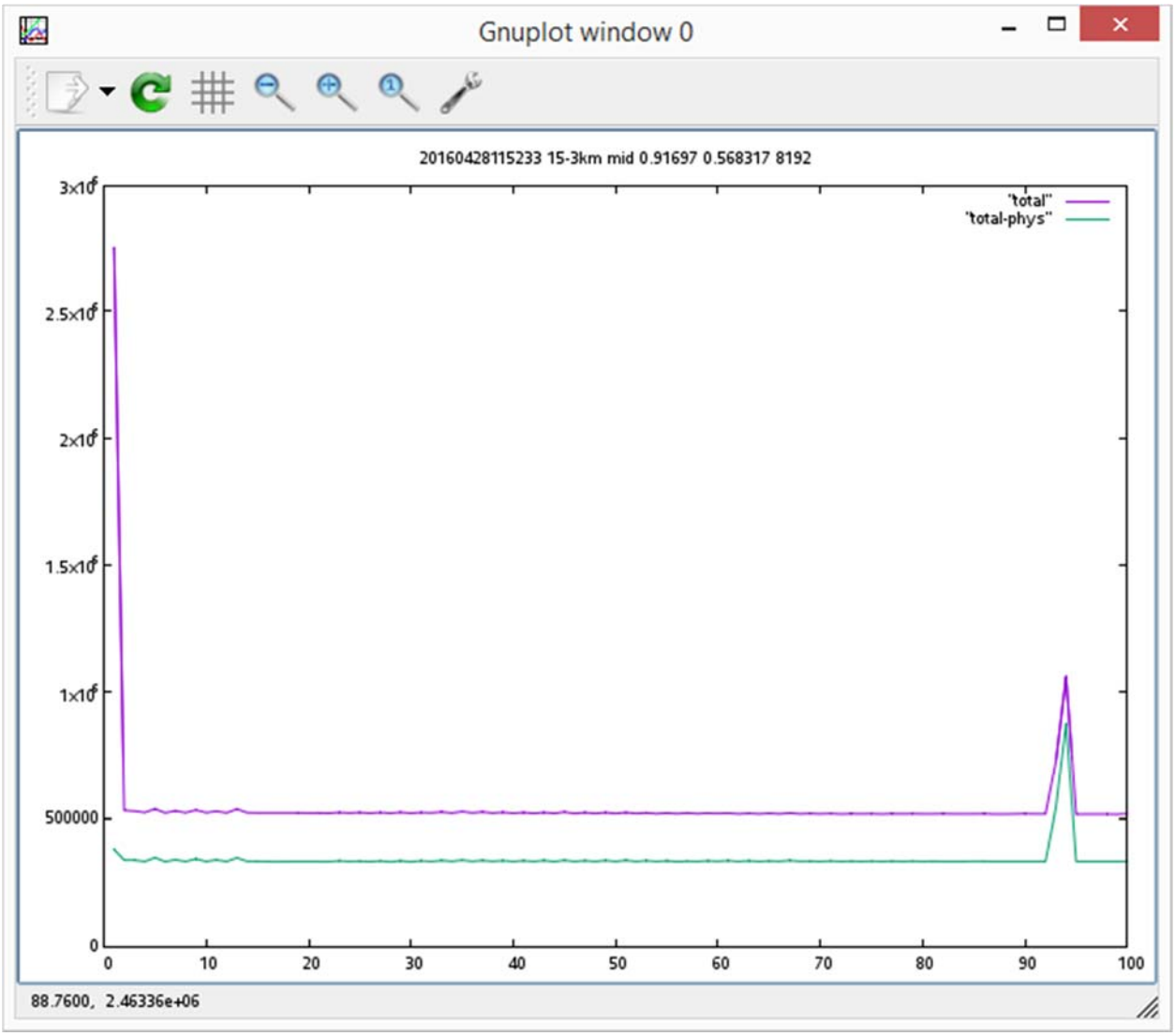


MPAS: 2036020 Job ID 11km mid:

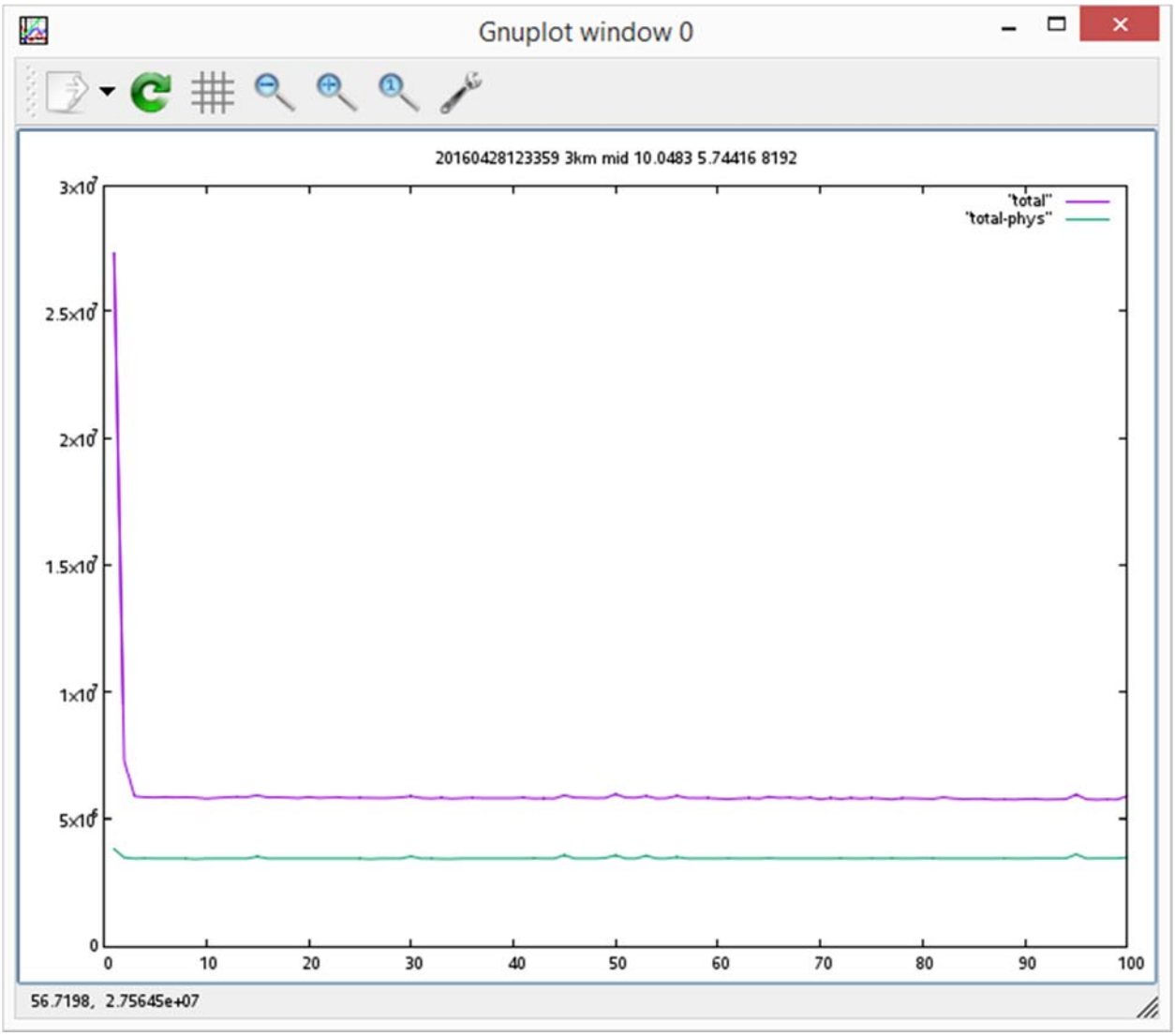

Gnuplot window 0
20160428110221 11km mid 8.40735 6.00254 5760
"total"
"total-phys"
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
450
500
-41.2193, -140265.



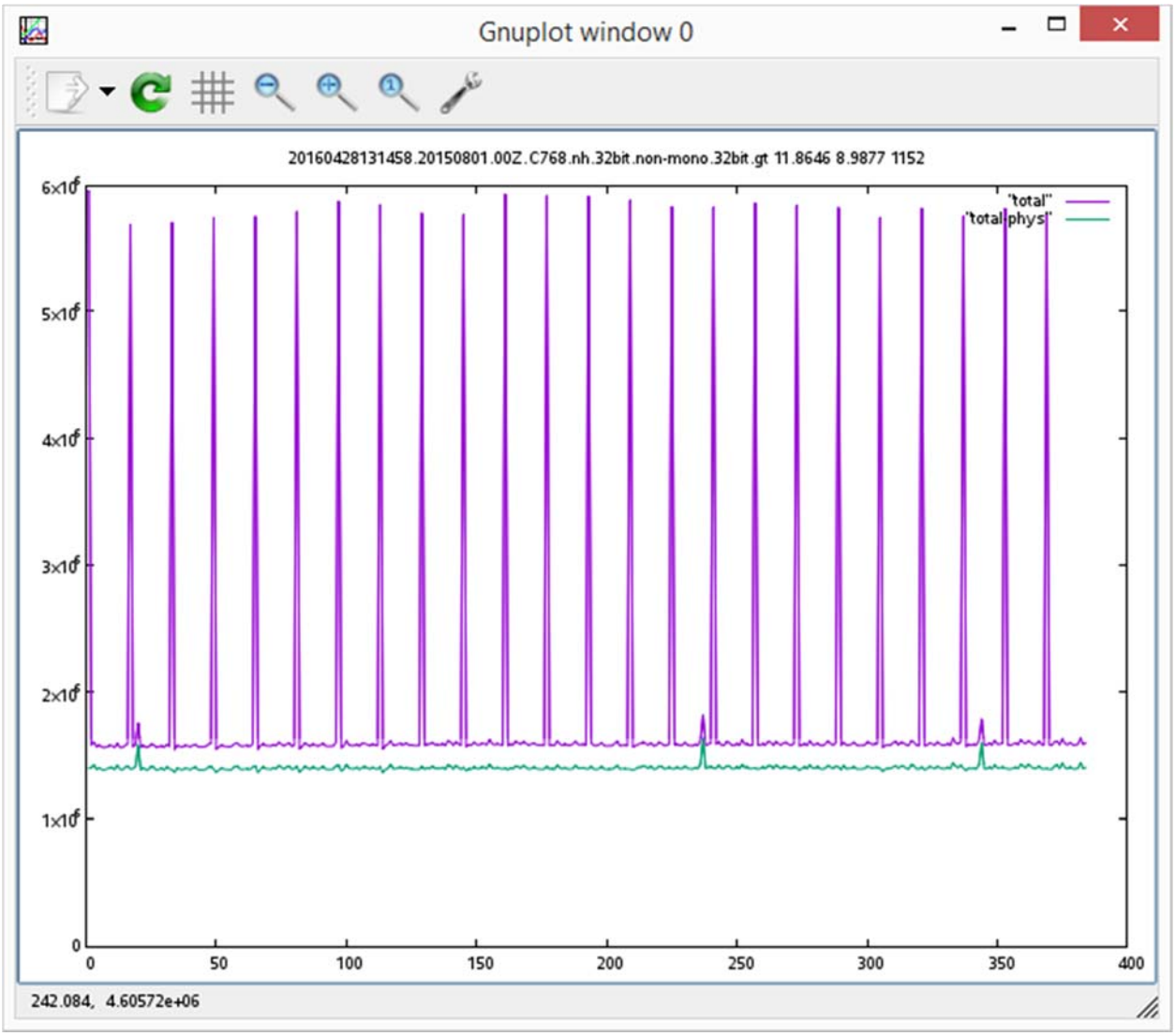
MPAS: Job ID: 2036252 15-3km

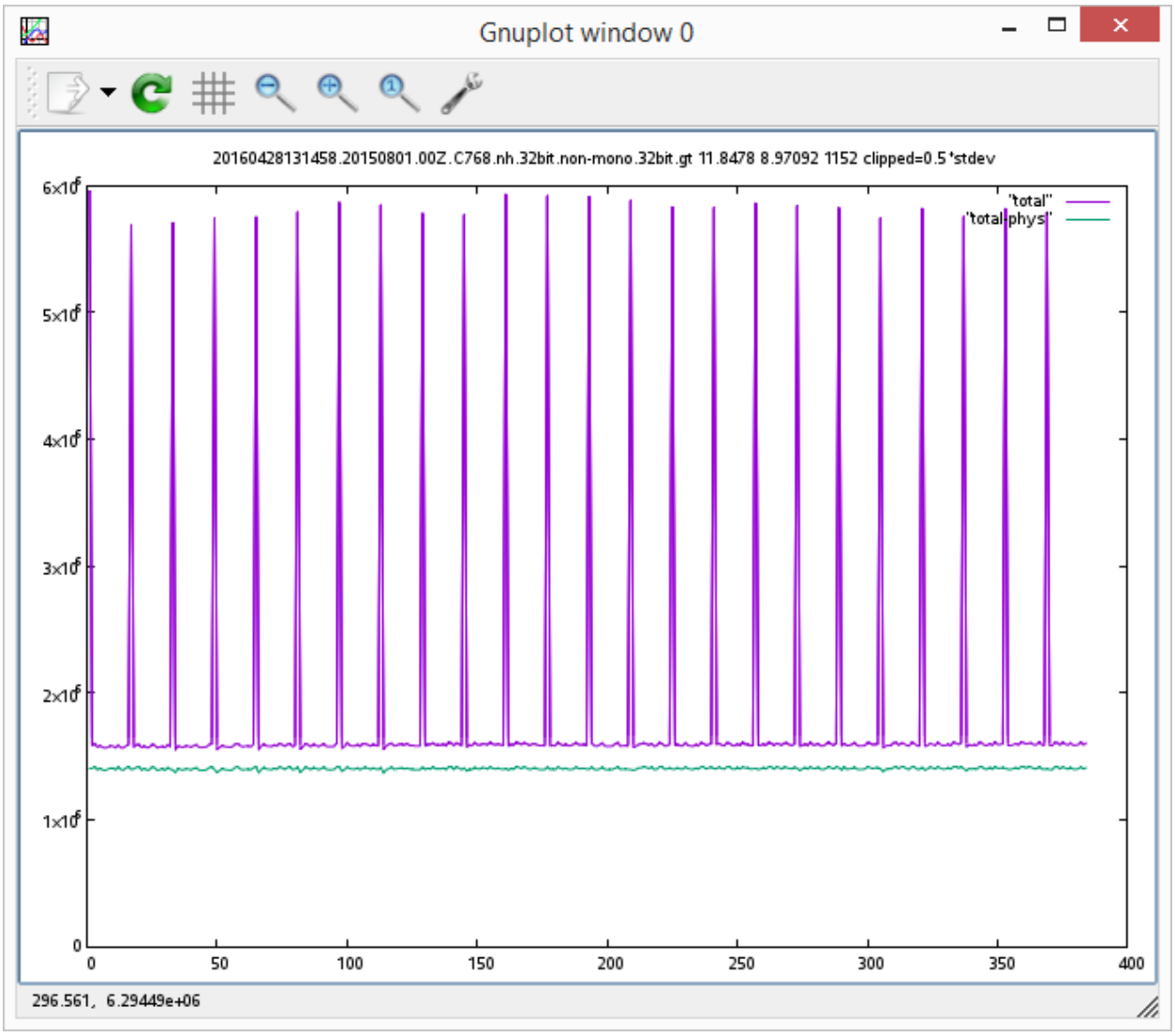


MPAS: Job ID: 2036415 3km Uniform resolution

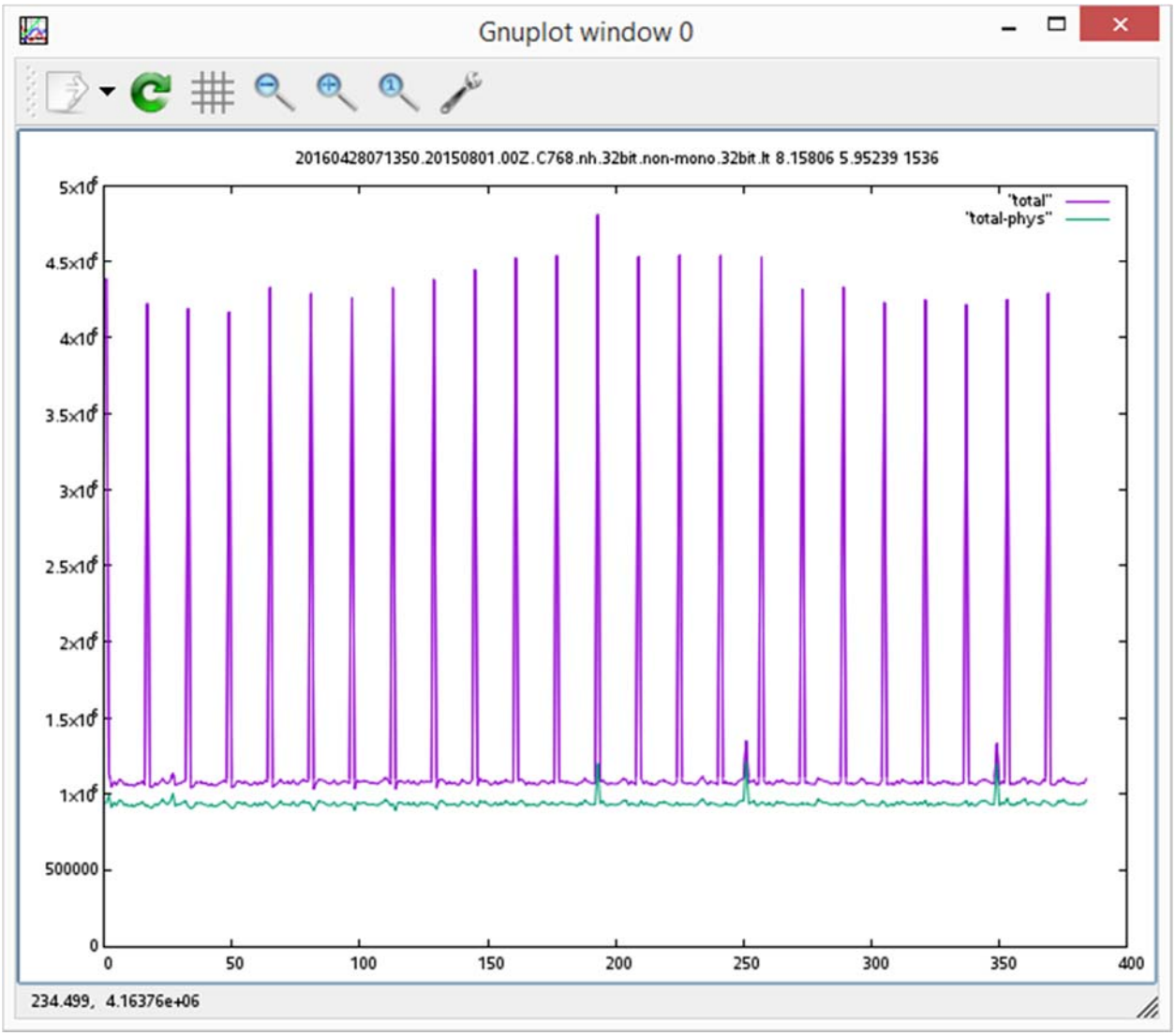


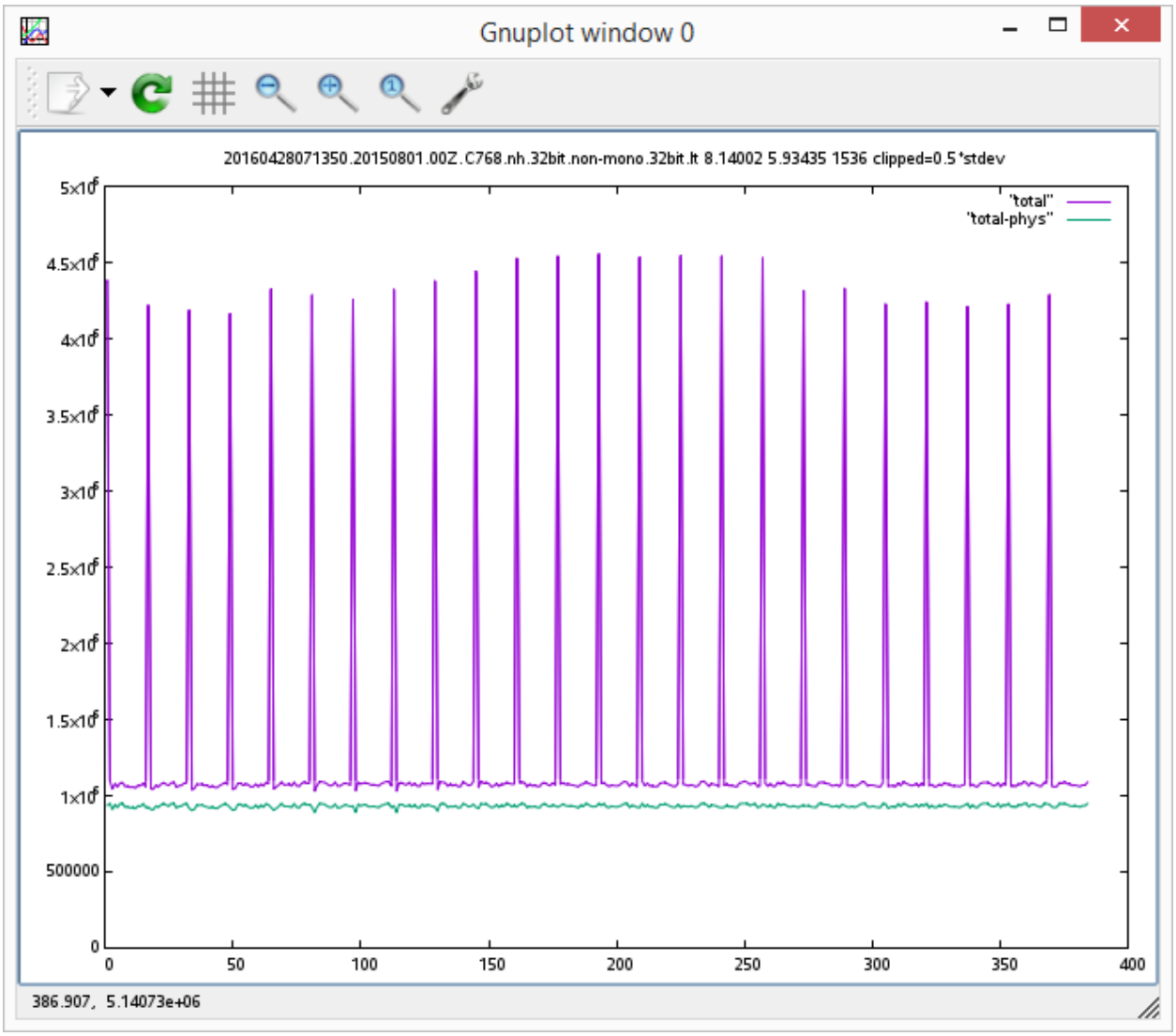
FV3: RERUN job id 2037448perf_c768_32bit.gt Nom. res, 36 nodes: 576 MPI tasks, 4-way threaded (> 8.5 min/day)


Gnuplot window 0
20160428131458.20150801.00Z.C768.nh.32bit.non-mono.32bit.gt 11.8646 8.9877 1152
"total"
"total_phys"
6x10^6
5x10^6
4x10^6
3x10^6
2x10^6
1x10^6
0
0
50
100
150
200
250
300
350
400
242.084, 4.60572e+06

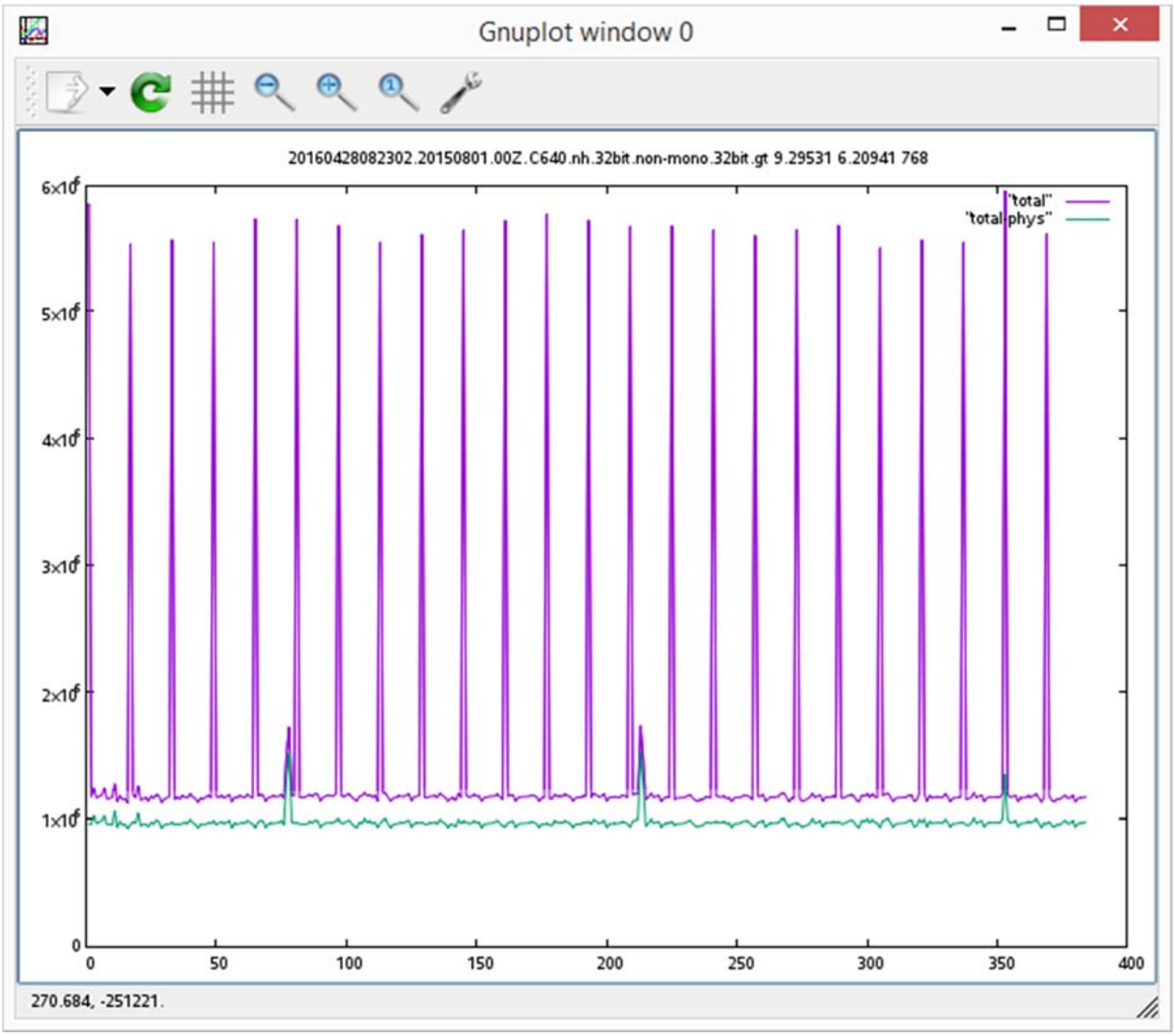


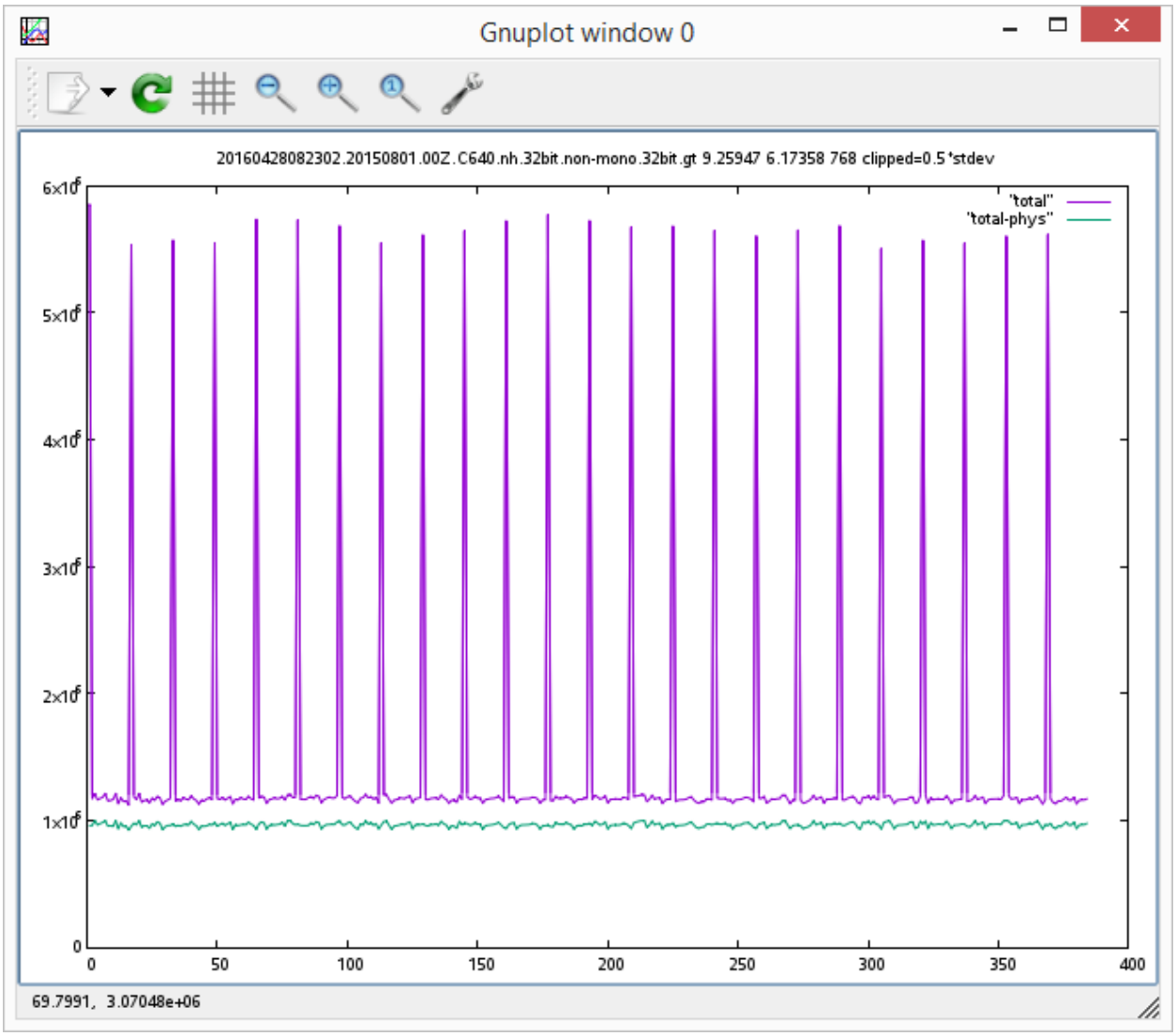
FV3: Job ID 2035258 perf_c768_32bit.lt Nom. res, 48 nodes: 768 MPI tasks, 4-way threaded (< 8.5 min/day):


Gnuplot window 0
20160428071350.20150801.00Z.C768.nh.32bit.non-mono.32bit.lt 8.15806 5.95239 1536
"total"
"total-phys"
5x10^6
4.5x10^6
4x10^6
3.5x10^6
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
234.499, 4.16376e+06

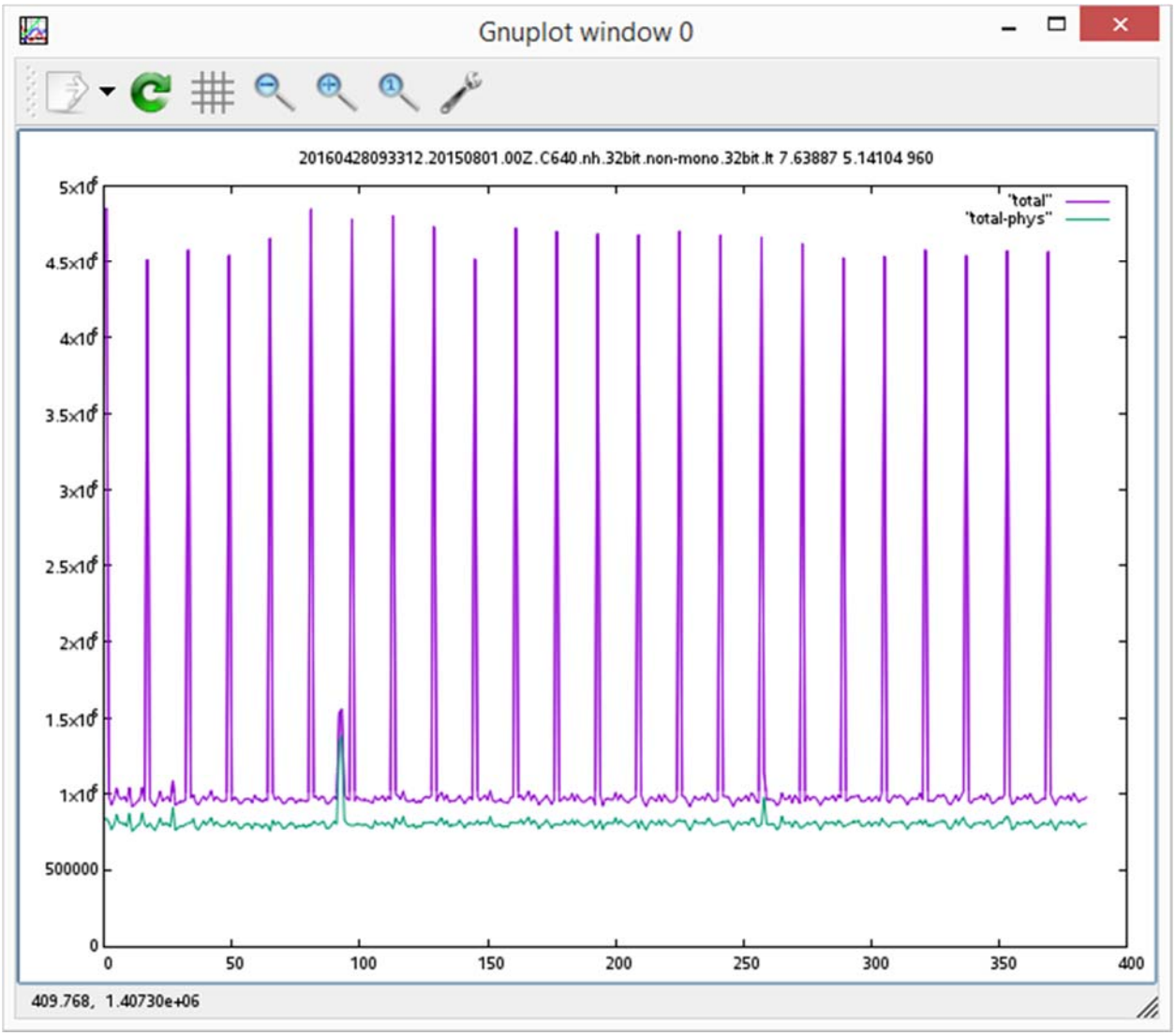


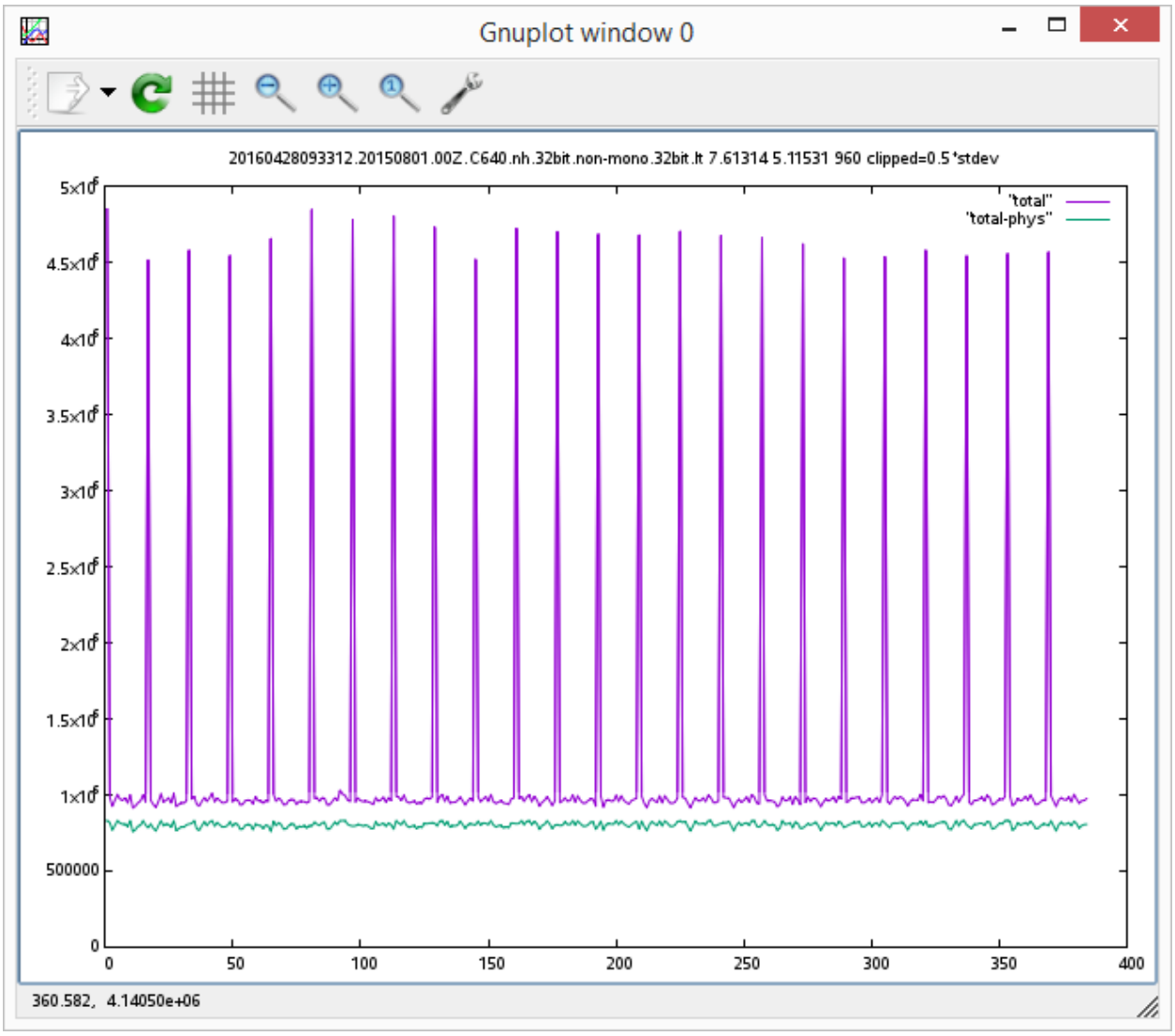
FV3: Job ID 2035864 perf_c640_32bit.gt Lower res, 24 nodes: 768 MPI tasks, 2-way threaded (> 8.5 min/day)


Gnuplot window 0
20160428082302.20150801.00Z.C640.nh.32bit.non-mono.32bit.gt 9.29531 6.20941 768
"total"
"total_phys"
6x10
5x10
4x10
3x10
2x10
1x10
0
0
50
100
150
200
250
300
350
400
270.684, -251221.

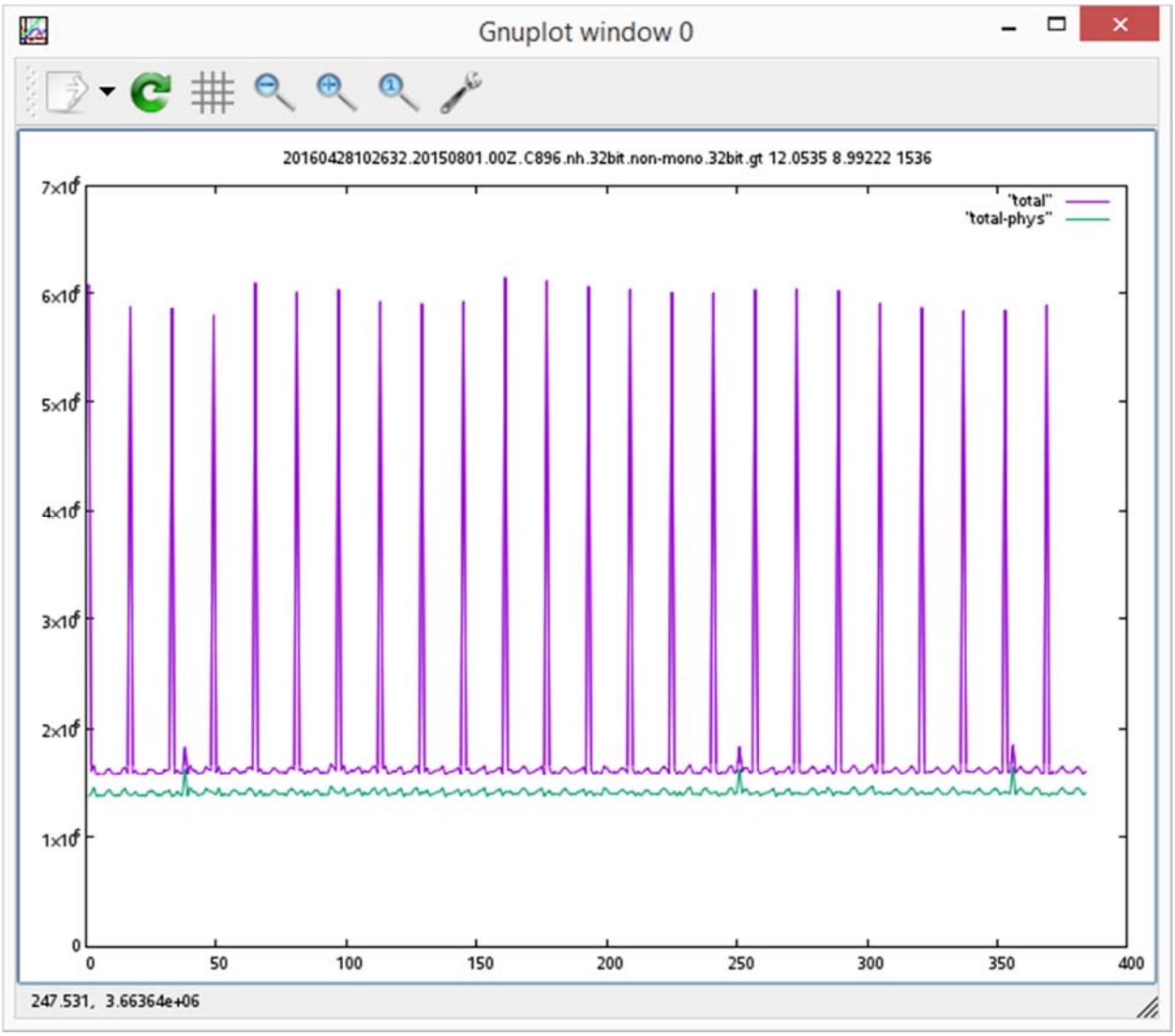


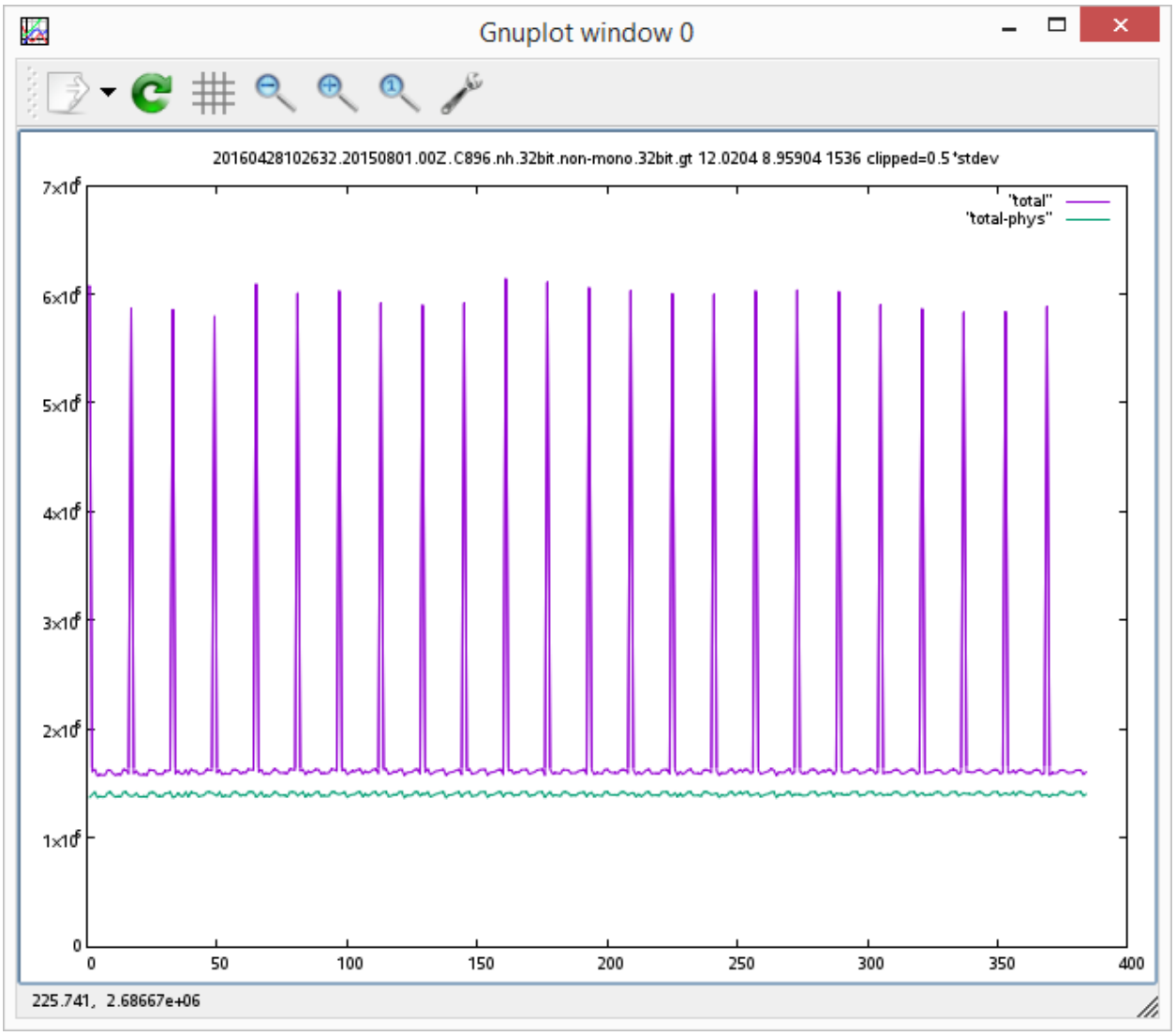
FV3: Job ID 2035976 perf_c640_32bit.lt Lower res, 24 nodes: 768 MPI tasks, 2-way threaded (< 8.5 min/day)


Gnuplot window 0
20160428093312.20150801.00Z.C640.nh.32bit.non-mono.32bit.lt 7.63887 5.14104 960
"total"
"total-phys"
5x10^6
4.5x10^6
4x10^6
3.5x10^6
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
409.768, 1.40730e+06

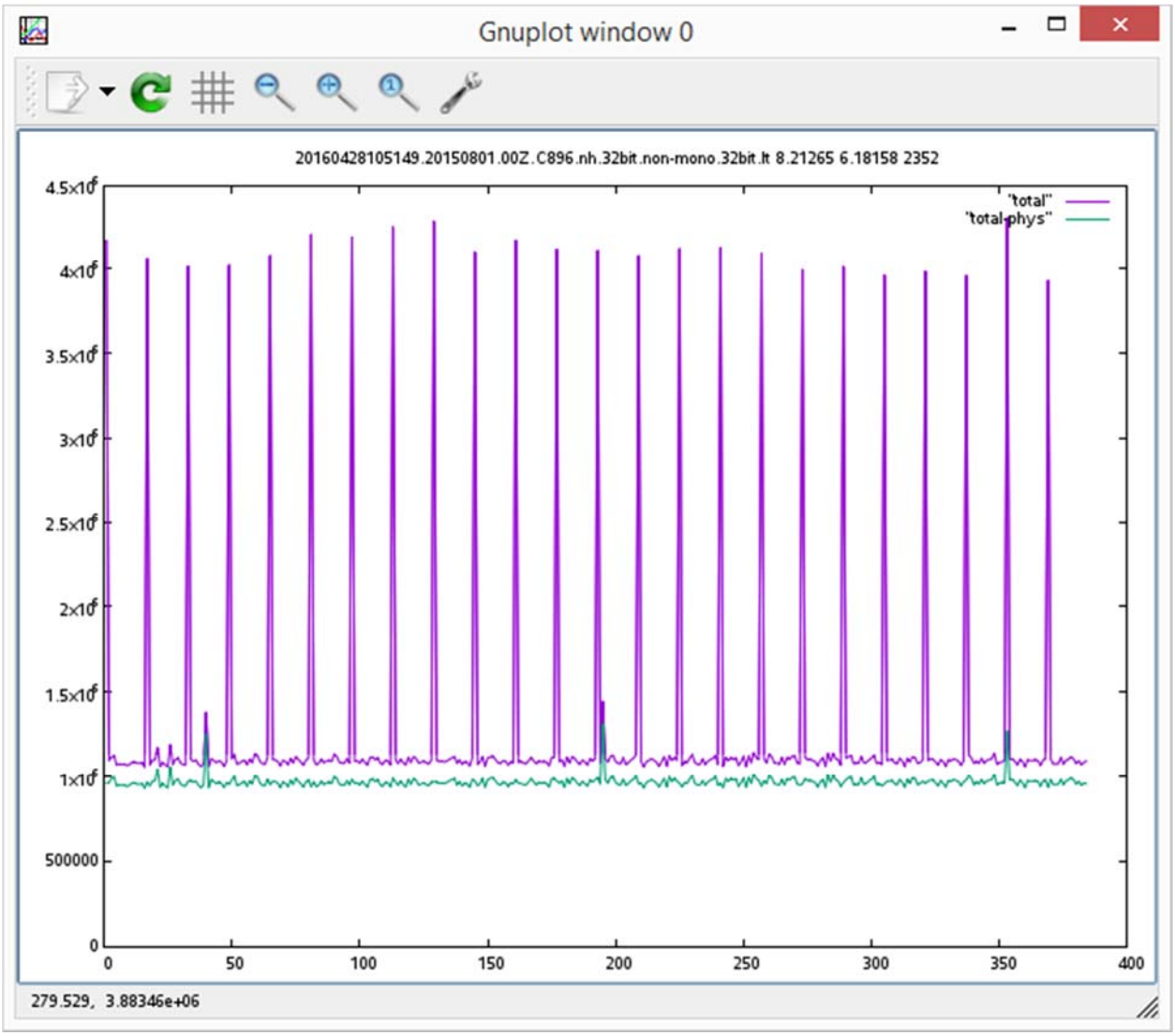


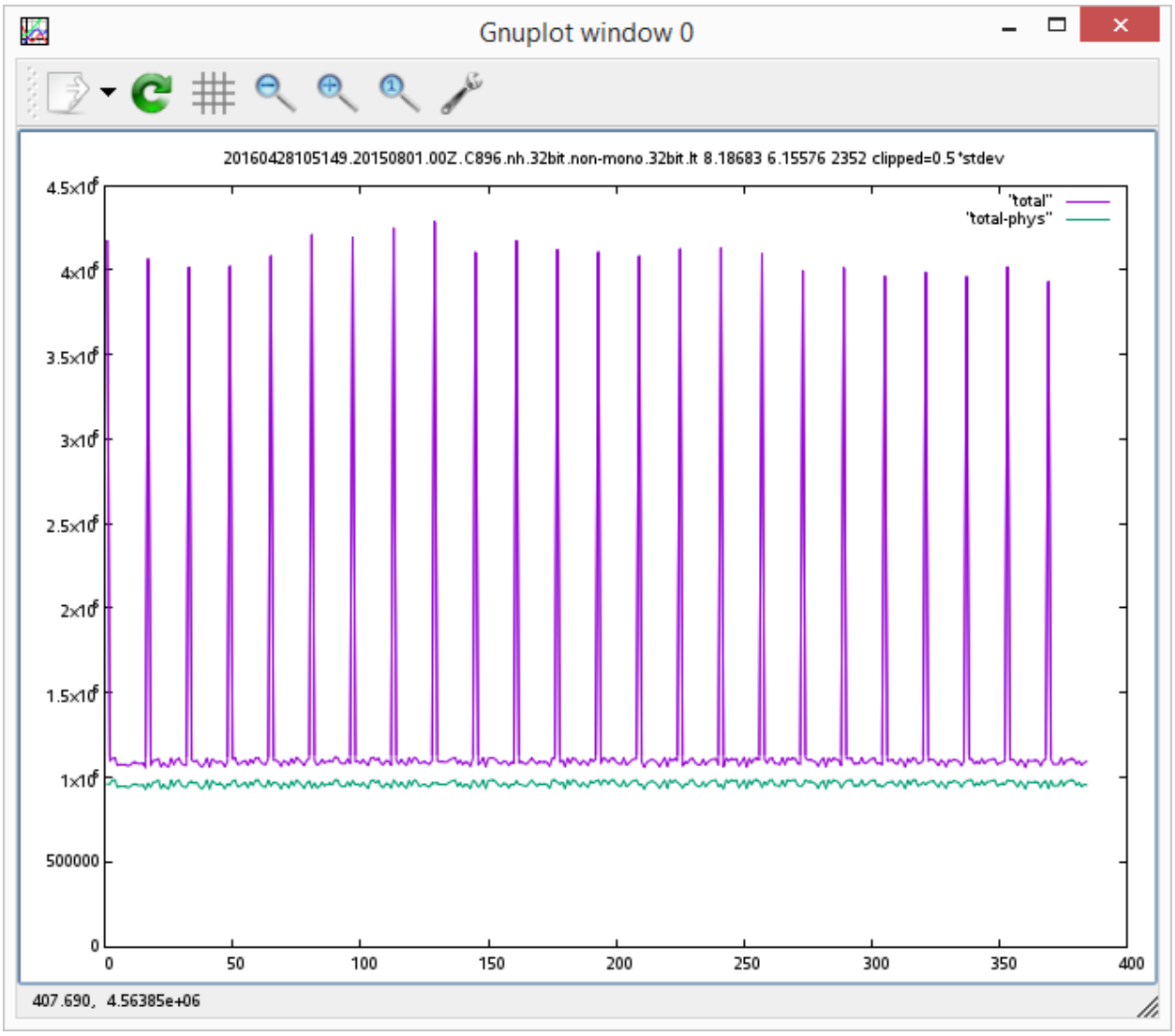
FV3: Job ID 2036017 C896.nh.32bit.non-mono.32bit.gt


Gnuplot window 0
20160428102632.20150801.00Z.C896.nh.32bit.non-mono.32bit.gt 12.0535 8.99222 1536
"total"
"total-phys"
7x10^6
6x10^6
5x10^6
4x10^6
3x10^6
2x10^6
1x10^6
0
0
50
100
150
200
250
300
350
400
247.531, 3.66364e+06

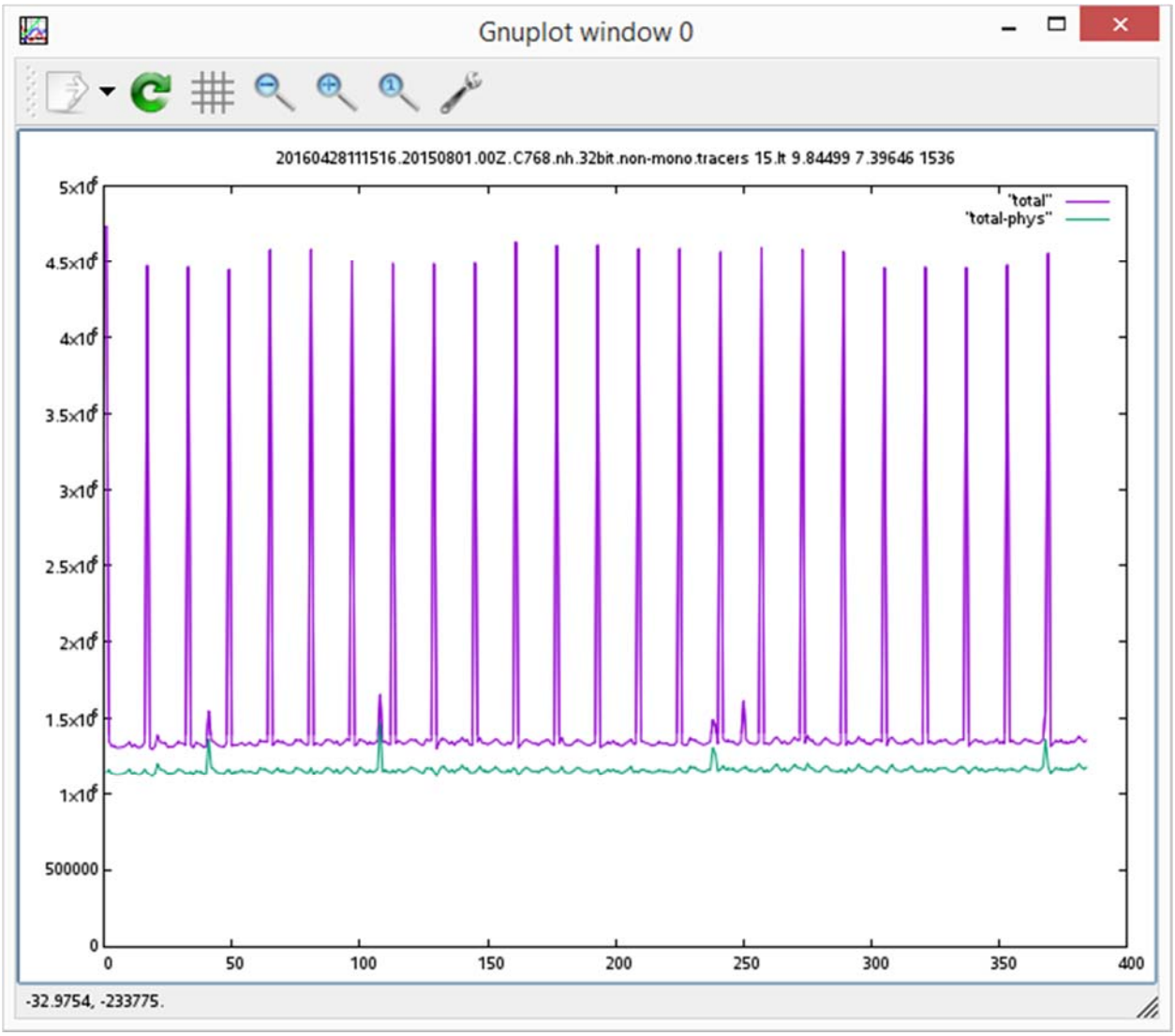


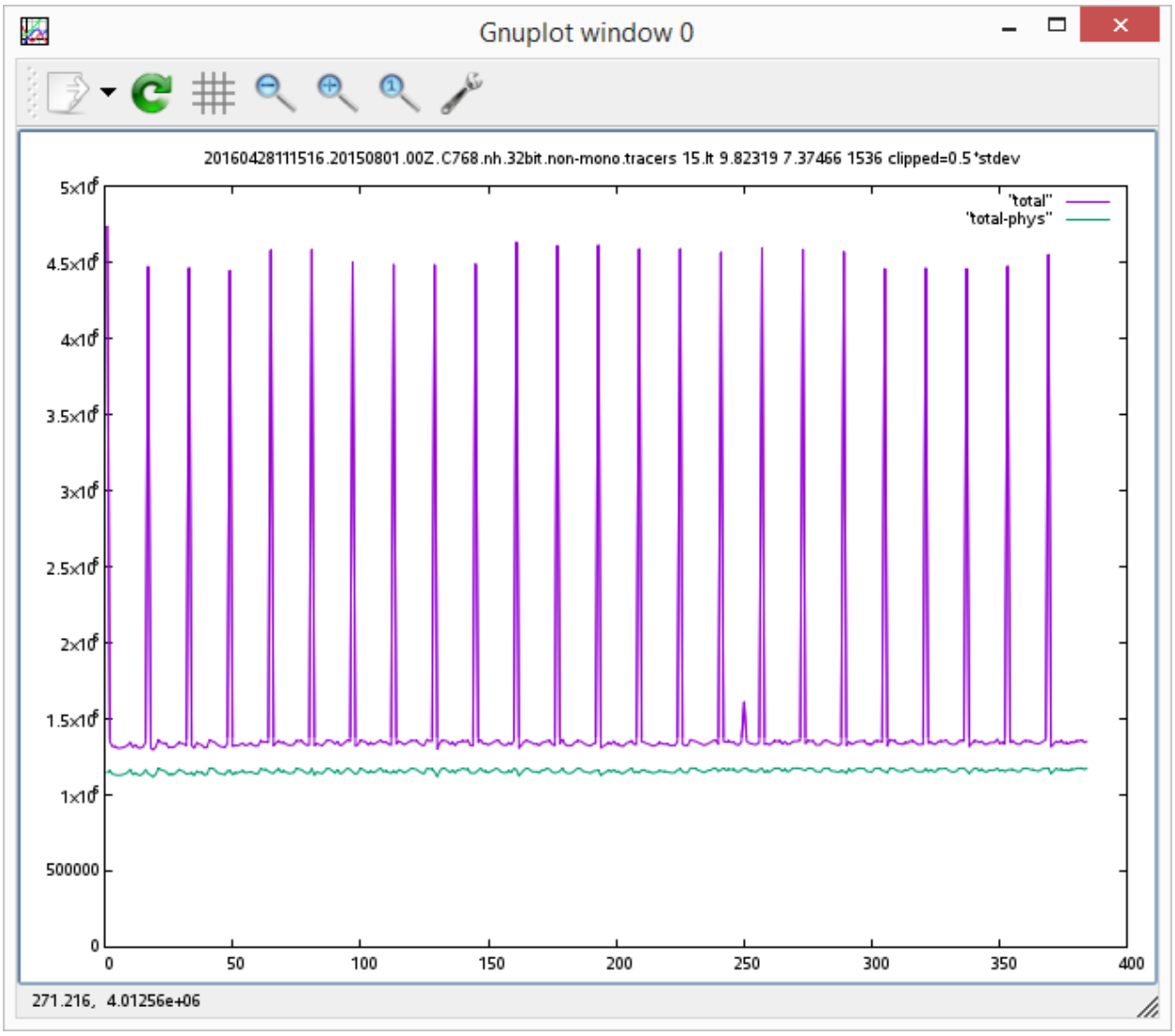
FV3: job id 2036019 C896.nh.32bit.non-mono.32bit.lt:


Gnuplot window 0
20160428105149.20150801.00Z.C896.nh.32bit.non-mono.32bit.lt 8.21265 6.18158 2352
"total"
"total-phys"
4.5x10^6
4x10^6
3.5x10^6
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
279.529, 3.88346e+06

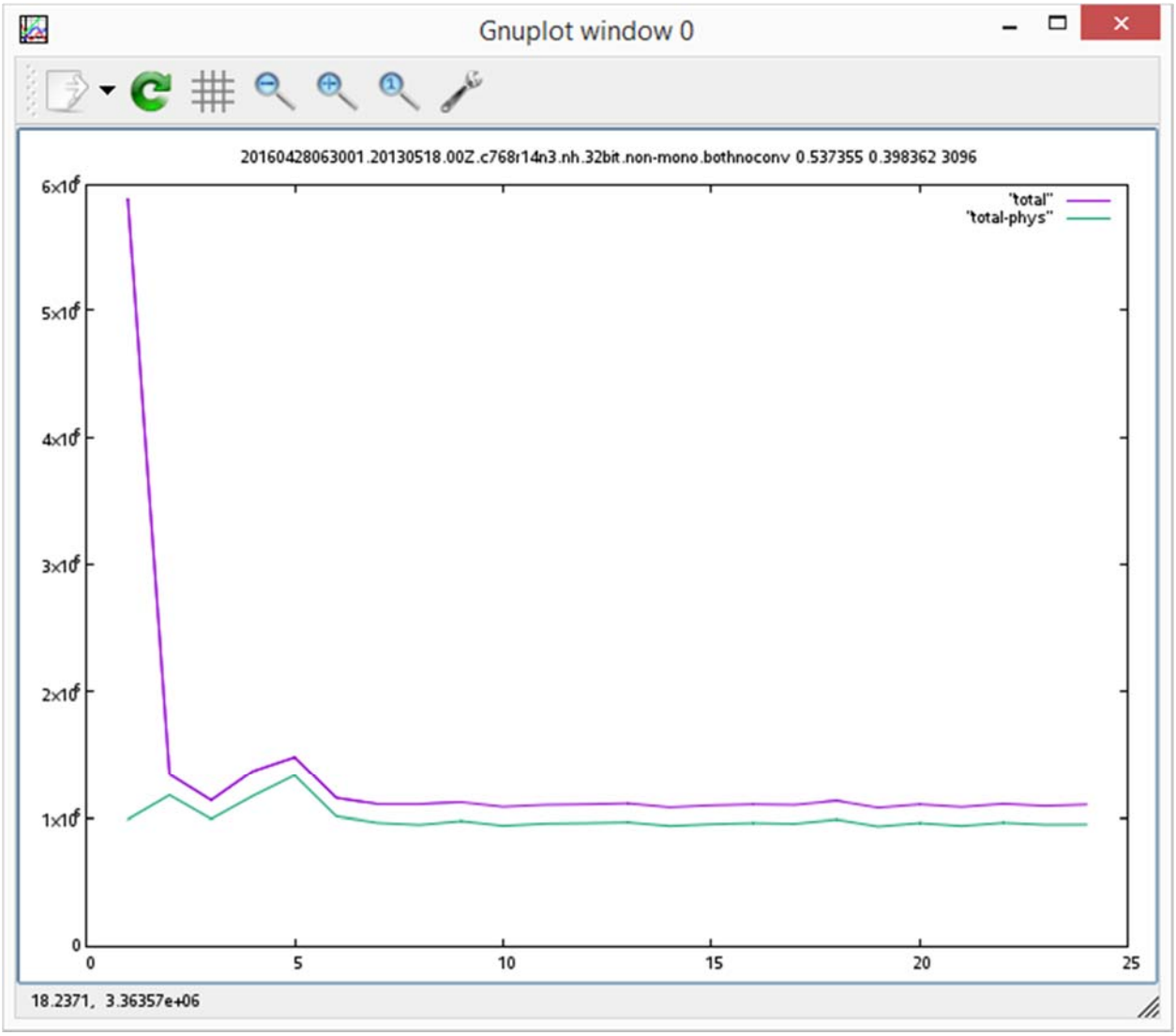


FV3: Job ID 2036021 13km 15 tracer run:

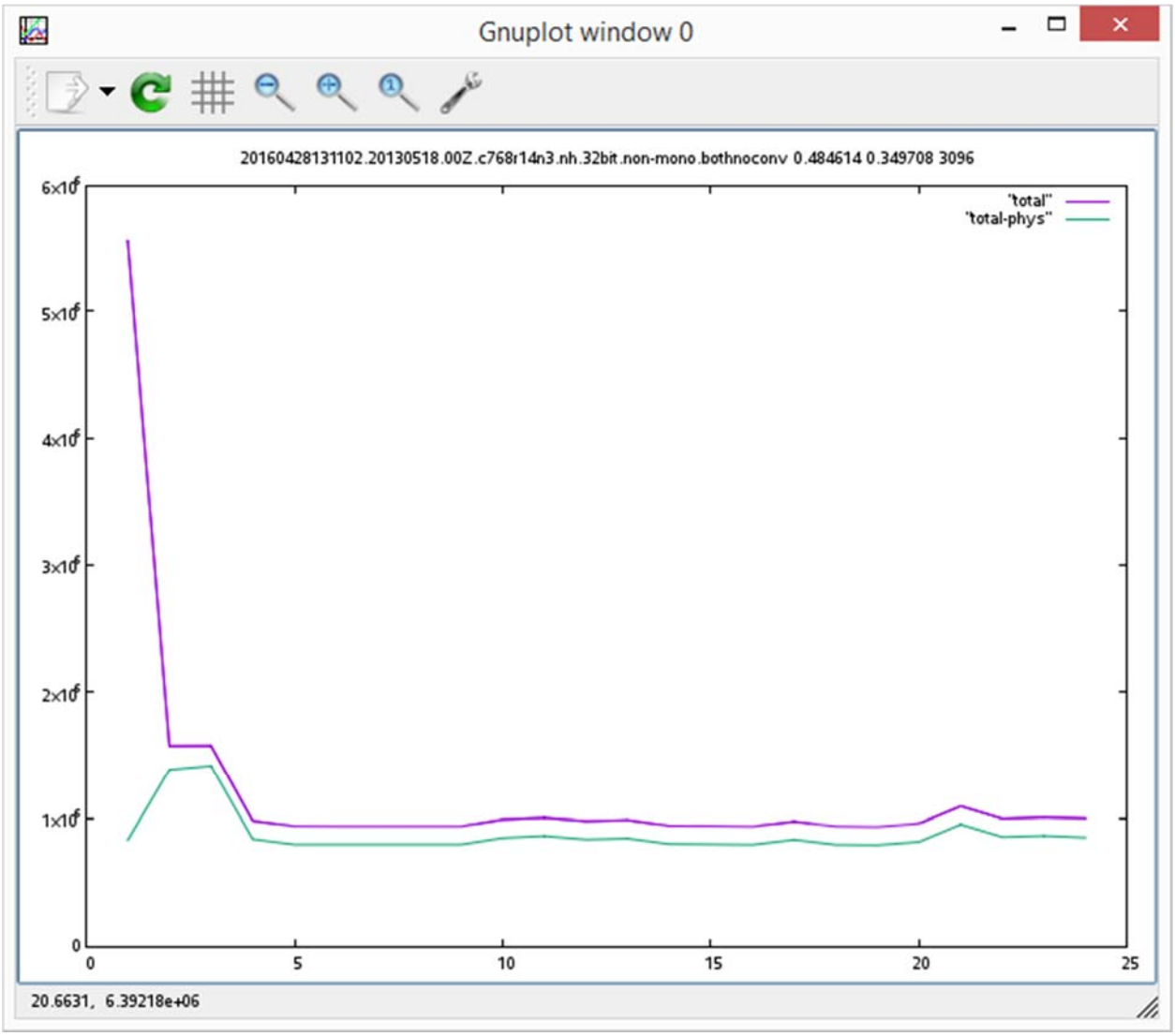

Gnuplot window 0
20160428111516.20150801.00Z.C768.nh.32bit.non-mono.tracers 15.lt 9.84499 7.39646 1536
"total"
"total-phys"
5x10^6
4.5x10^6
4x10^6
3.5x10^6
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
-32.9754, -233775.



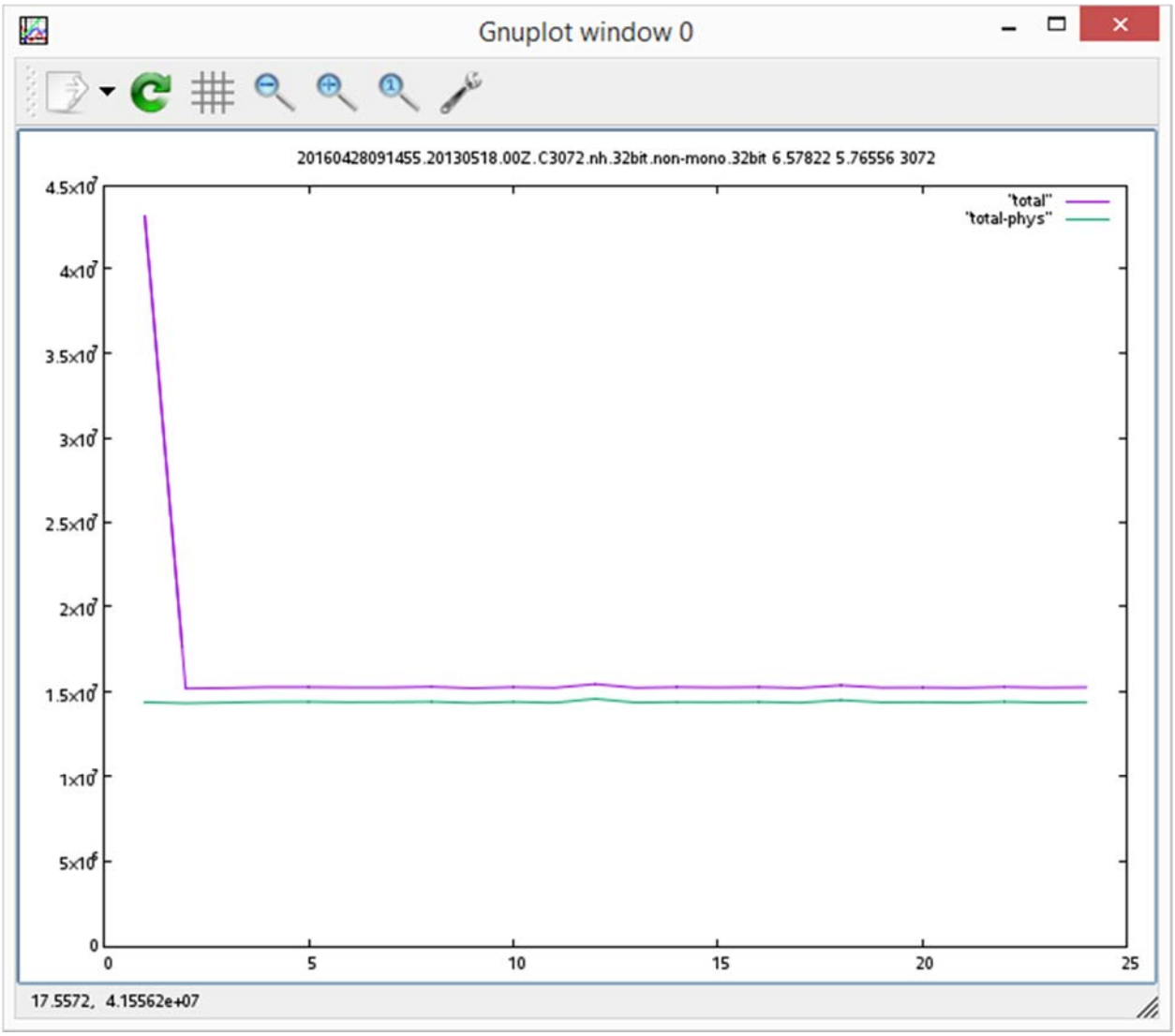
FV3:job id 2035254 perf_varres_32bit var res (nested). 97 nodes: 3096 MPI tasks, 2-way thrded (16 unused):



FV3:job id 2036416 RERUN perf_varres_32bit var res (nested). 97 nodes: 3096 MPI, 2-way tds (16 unused):



FV3: Job ID 2035874 (not sure about the jobid) 3km uniform res

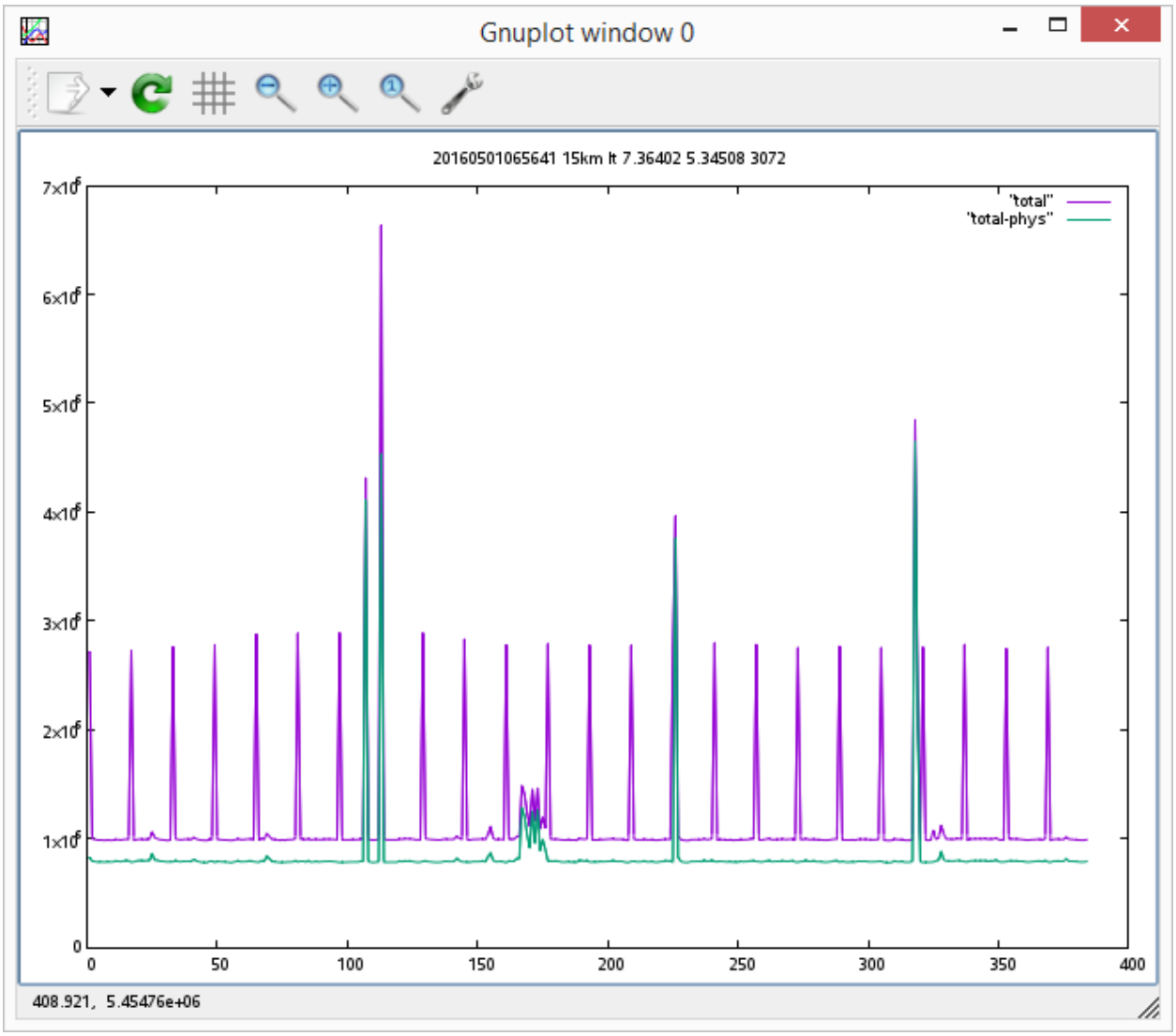

Gnuplot window 0
20160428091455.20130518.00Z.C3072.nh.32bit.non-mono.32bit 6.57822 5.76556 3072
"total"
"total-phys"
4.5x10^7
4x10^7
3.5x10^7
3x10^7
2.5x10^7
2x10^7
1.5x10^7
1x10^7
5x10^6
0
0
5
10
15
20
25
17.5572, 4.15562e+07

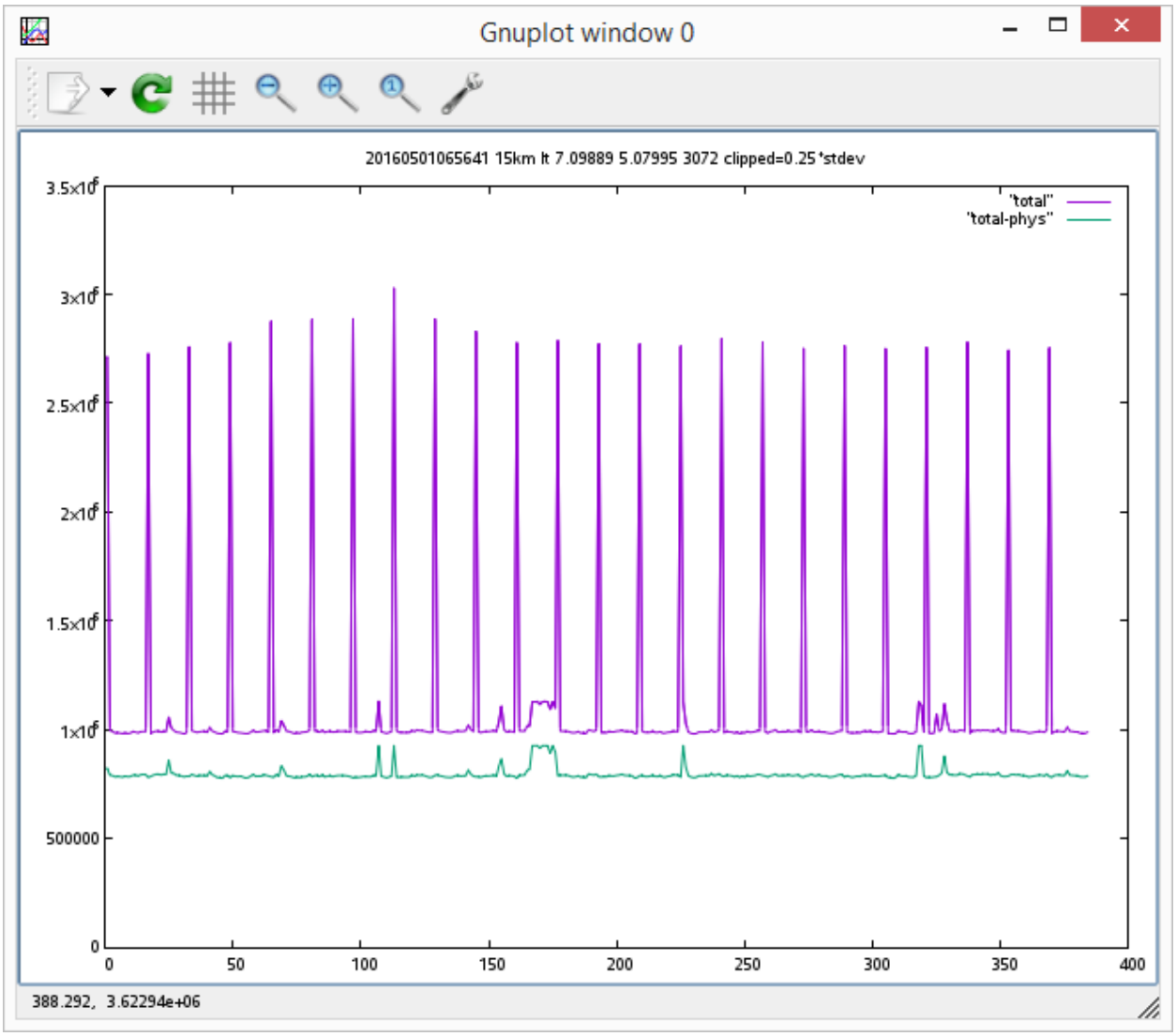
20160502 Some retests on Cori 05/01 (non dedicated)

Did a set of reruns on Cori yesterday (5/1) in the regular/premium queue with other jobs running. I did three of each hoping we might be able to factor out the variability and compare with the runs done 4/28.
Here's the series of runs that were done:

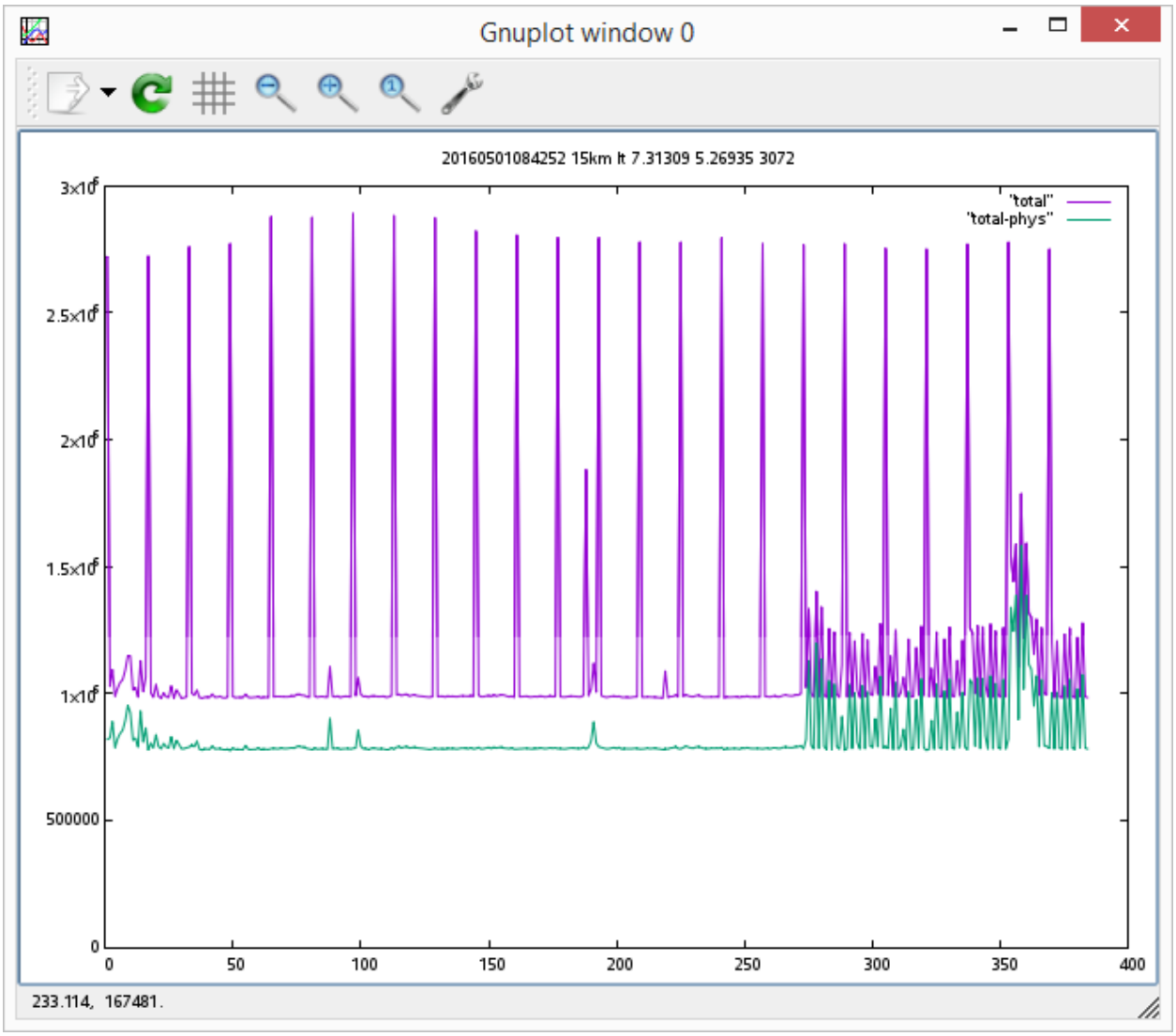
```
set jobs= ( \
mpas_15km_lt 3072 tasks\                Didn't run 4/28, used dt-reduced version
Mpas_15km_mid 2592 tasks\               Didn't run 4/28, used dt-reduced version
mpas_15km_gt  2048 tasks\               Didn't run 4/28, used dt-reduced version
mpas_13km_gt_dtreduced.rerun \          Because 4/28 used non-dt reduced core counts
mpas_13km_lt_dtreduced.rerun \          Because 4/28 used non-dt reduced core counts
(same set as above two other times for replication)
)
```

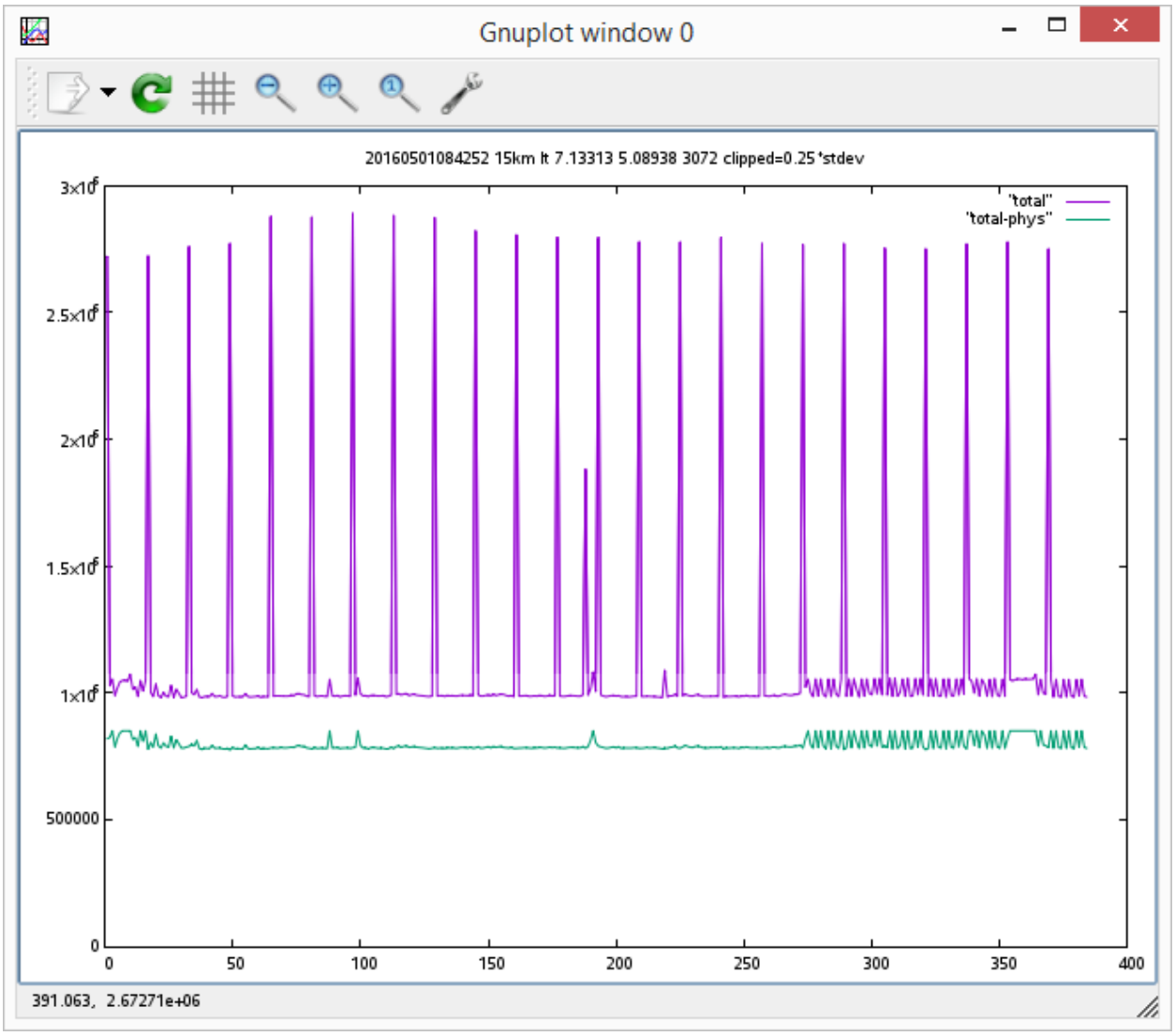
Mpas_15km_lt (1st) 3072 tasks


Gnuplot window 0
20160501065641 15km lt 7.36402 5.34508 3072
'total'
'total-phys'
7x10^6
6x10^6
5x10^6
4x10^6
3x10^6
2x10^6
1x10^6
0
0
50
100
150
200
250
300
350
400
408.921, 5.45476e+06

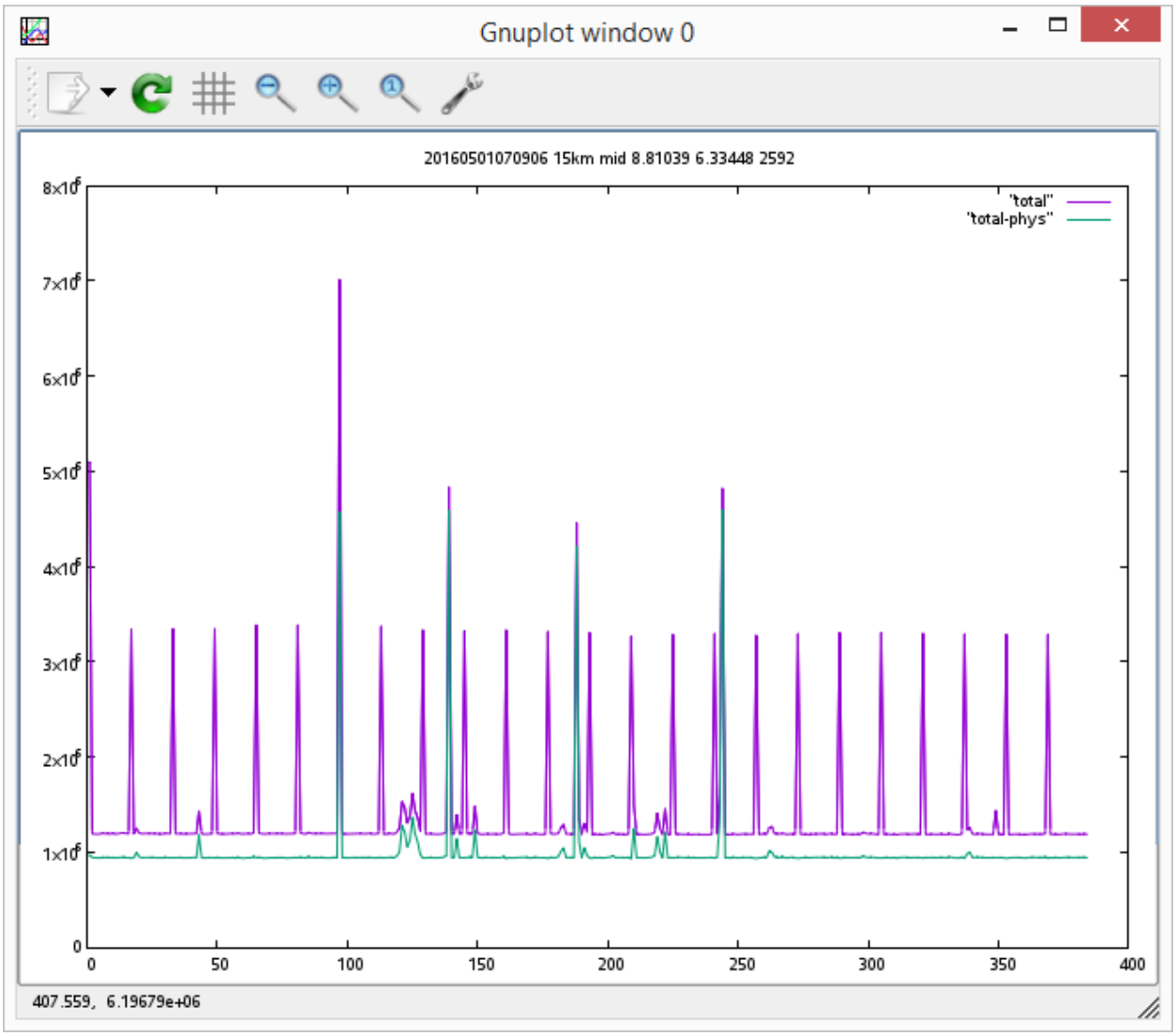


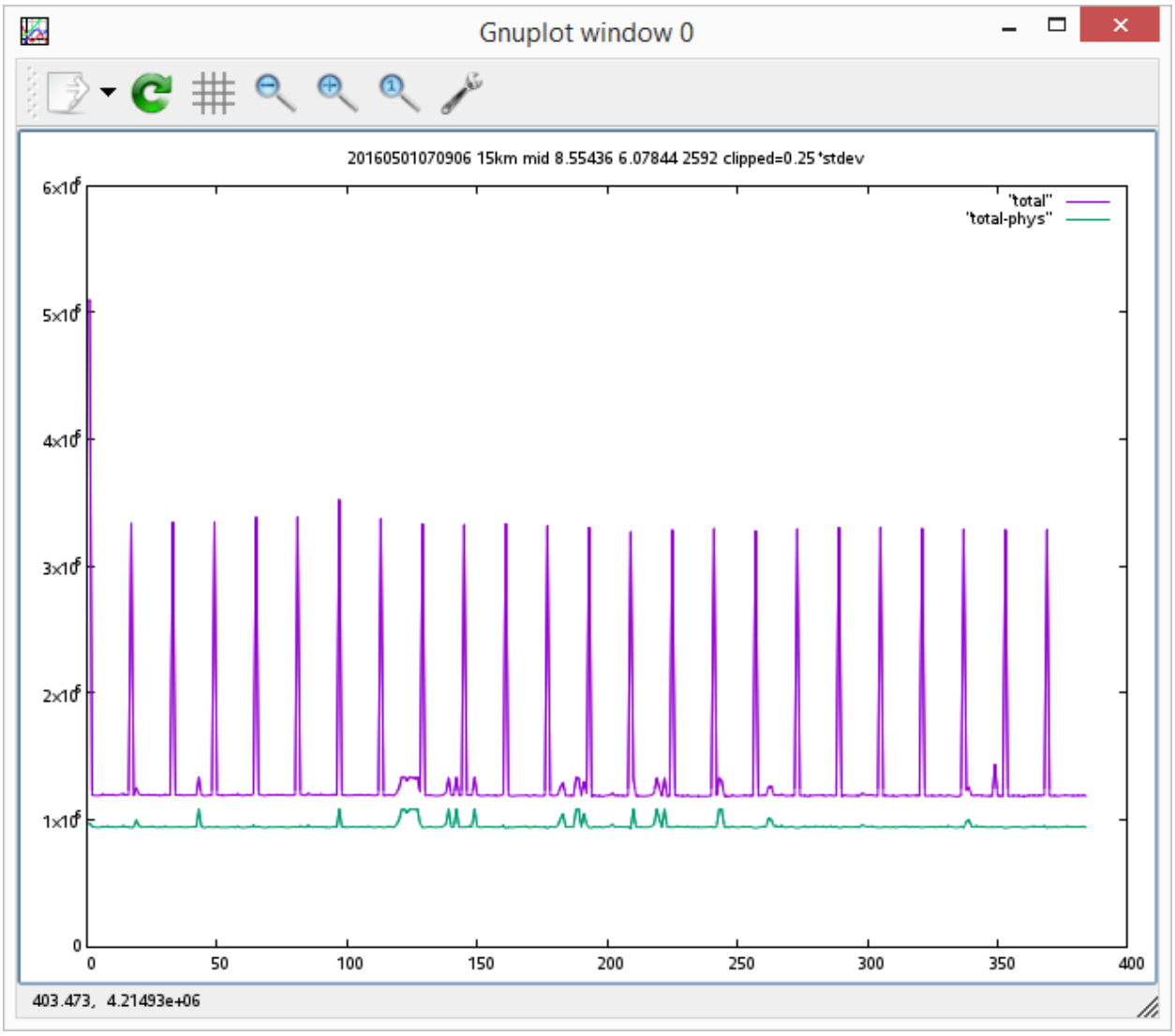
Mpas_15km_lt (2nd) 3072


Gnuplot window 0
20160501084252 15km lt 7.31309 5.26935 3072
'total'
'total-phys'
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
233.114, 167481.

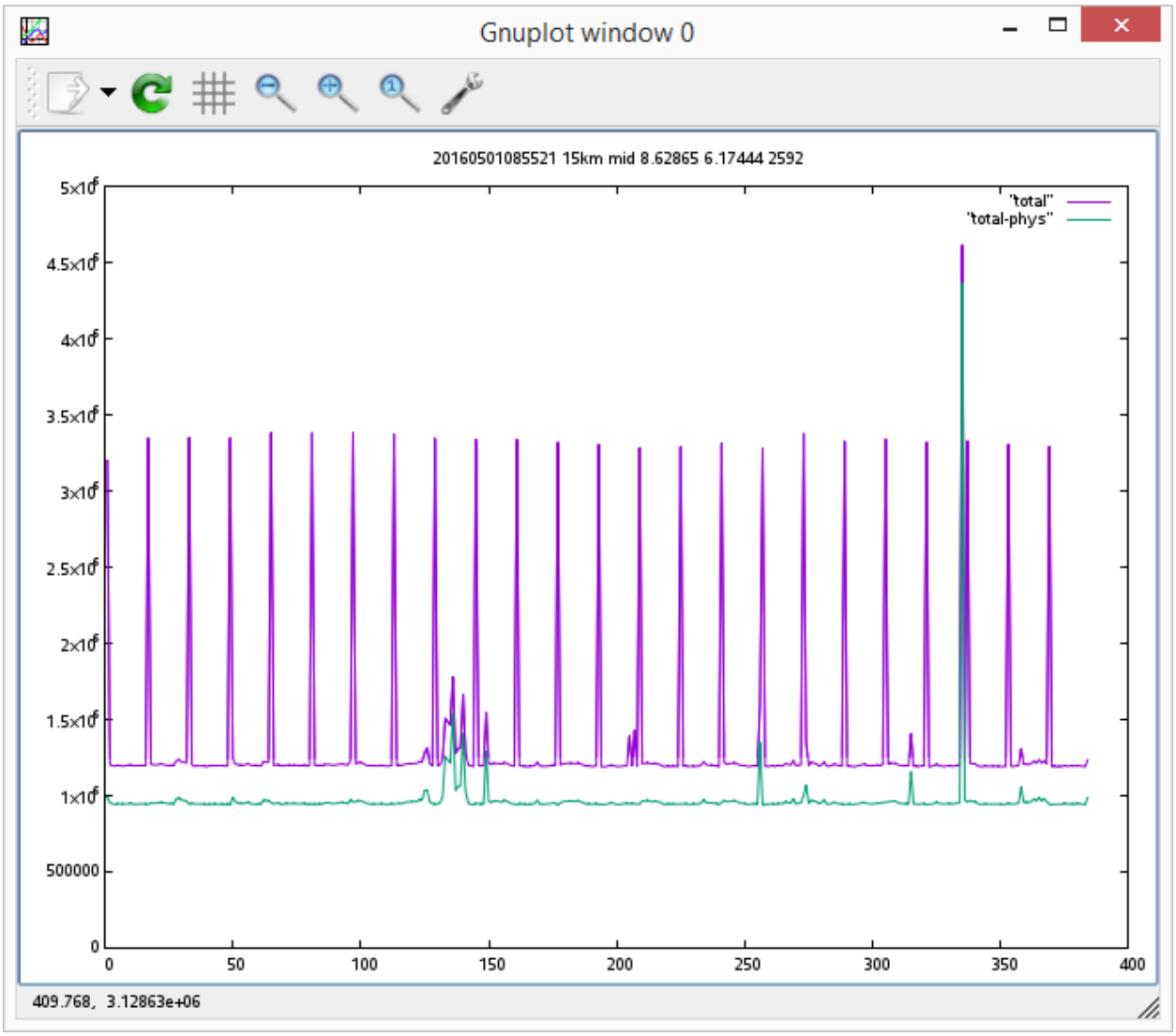


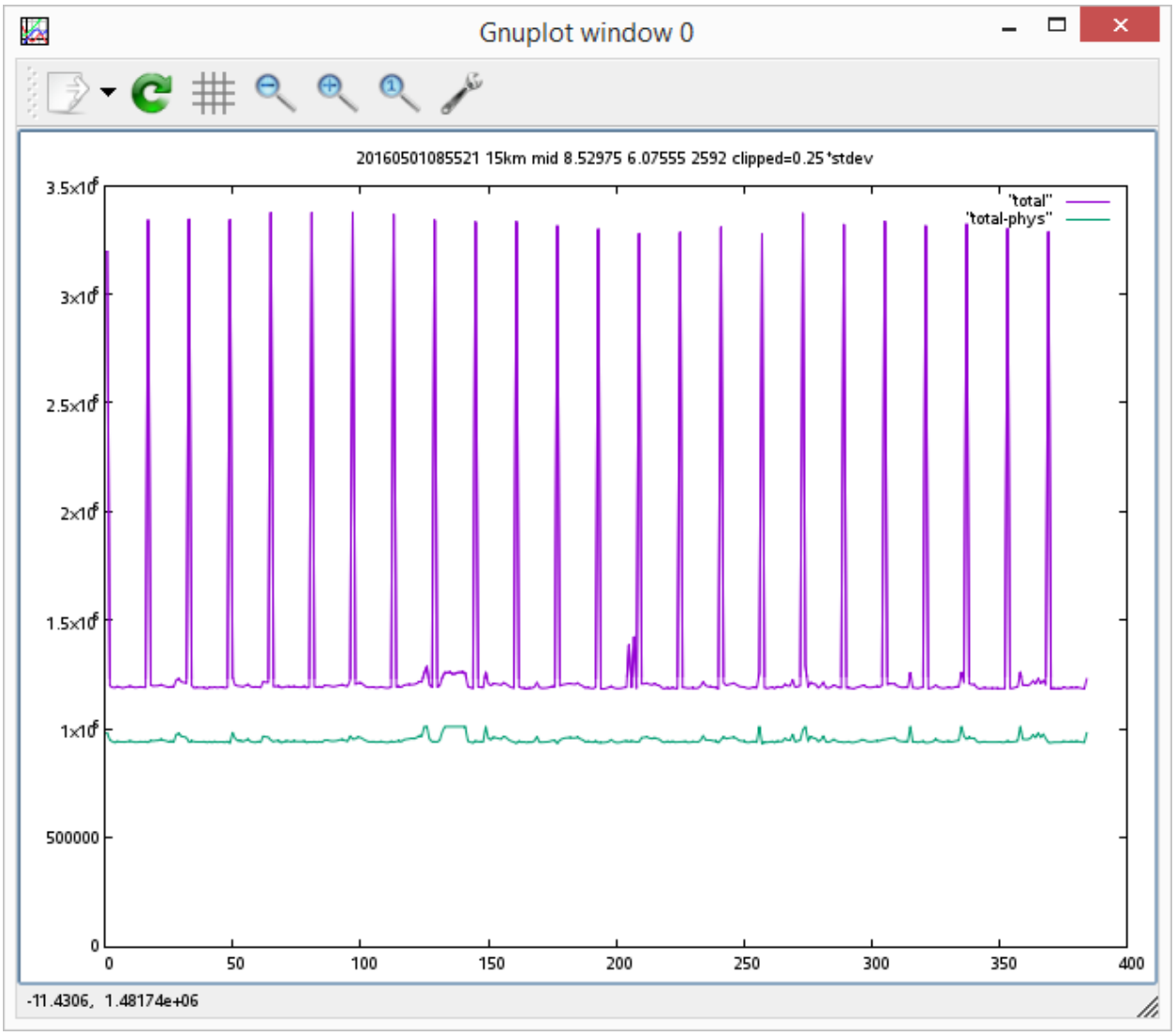
Mpas_15km_mid (1st) 2592 tasks


Gnuplot window 0
20160501070906 15km mid 8.81039 6.33448 2592
'total'
'total-phys'
8x10^6
7x10^6
6x10^6
5x10^6
4x10^6
3x10^6
2x10^6
1x10^6
0
0
50
100
150
200
250
300
350
400
407.559, 6.19679e+06

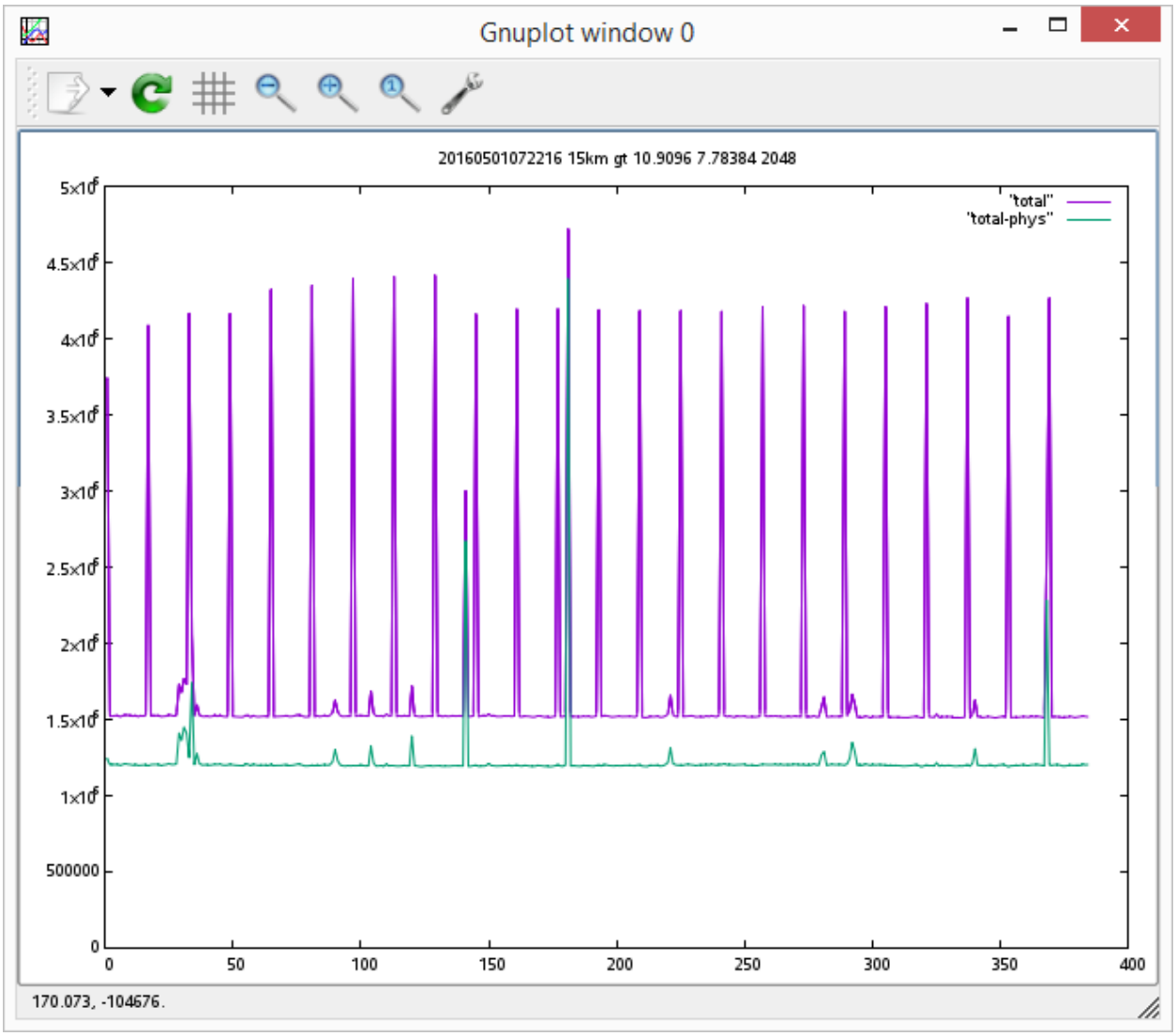


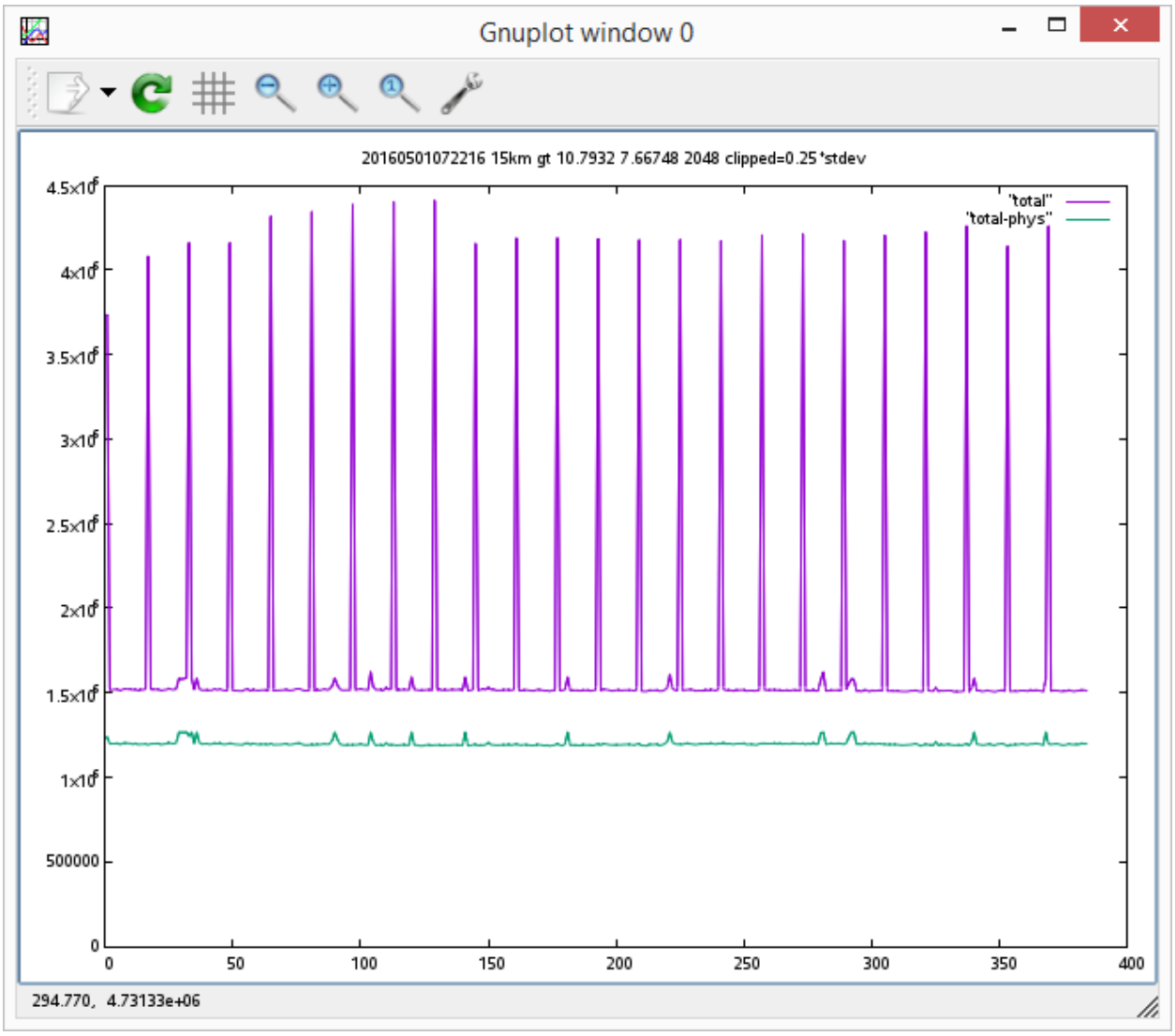
Mpas_15km_mid (2nd) 2592 tasks


Gnuplot window 0
20160501085521 15km mid 8.62865 6.17444 2592
'total'
'total-phys'
5x10^6
4.5x10^6
4x10^6
3.5x10^6
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
409.768, 3.12863e+06

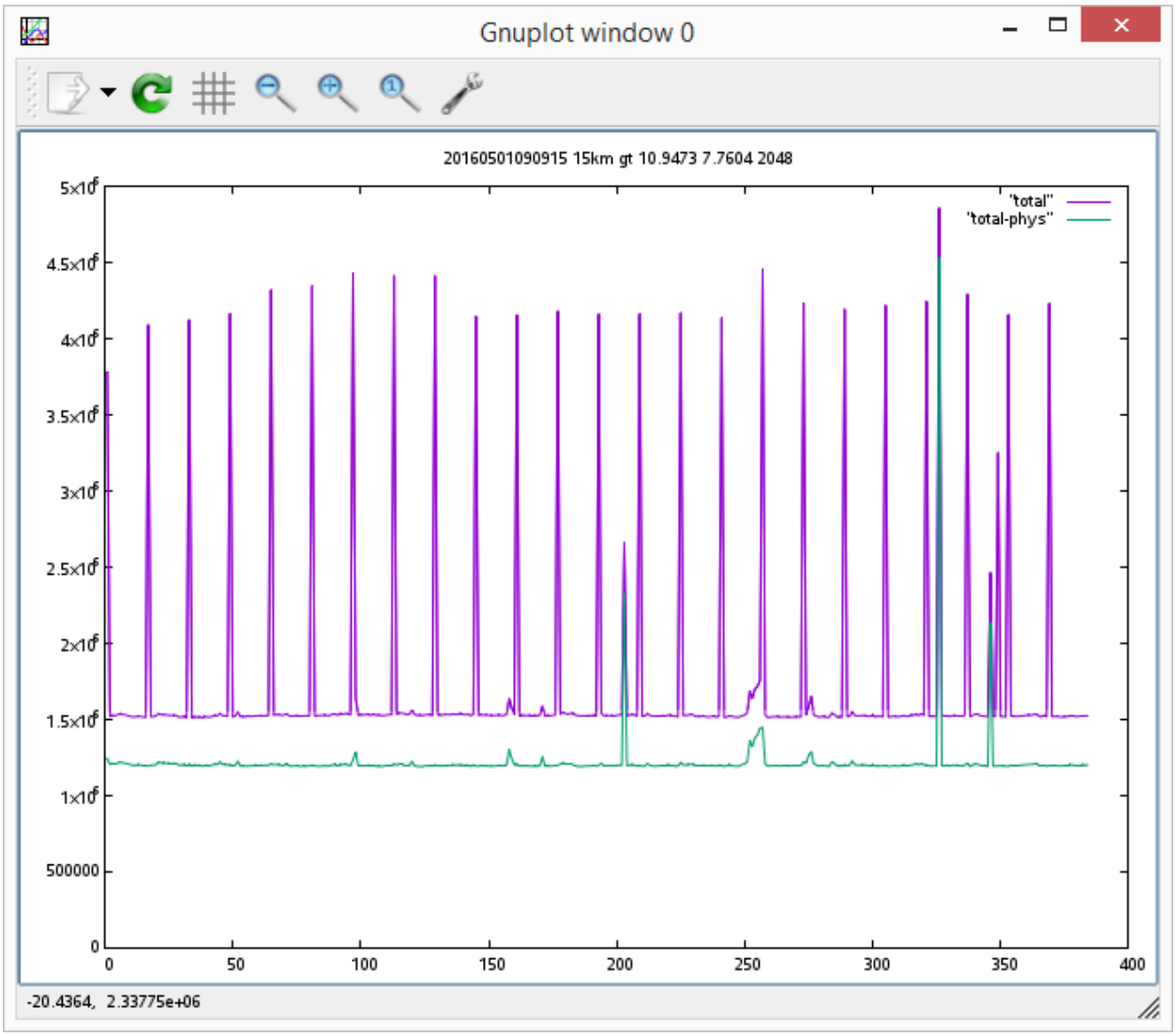


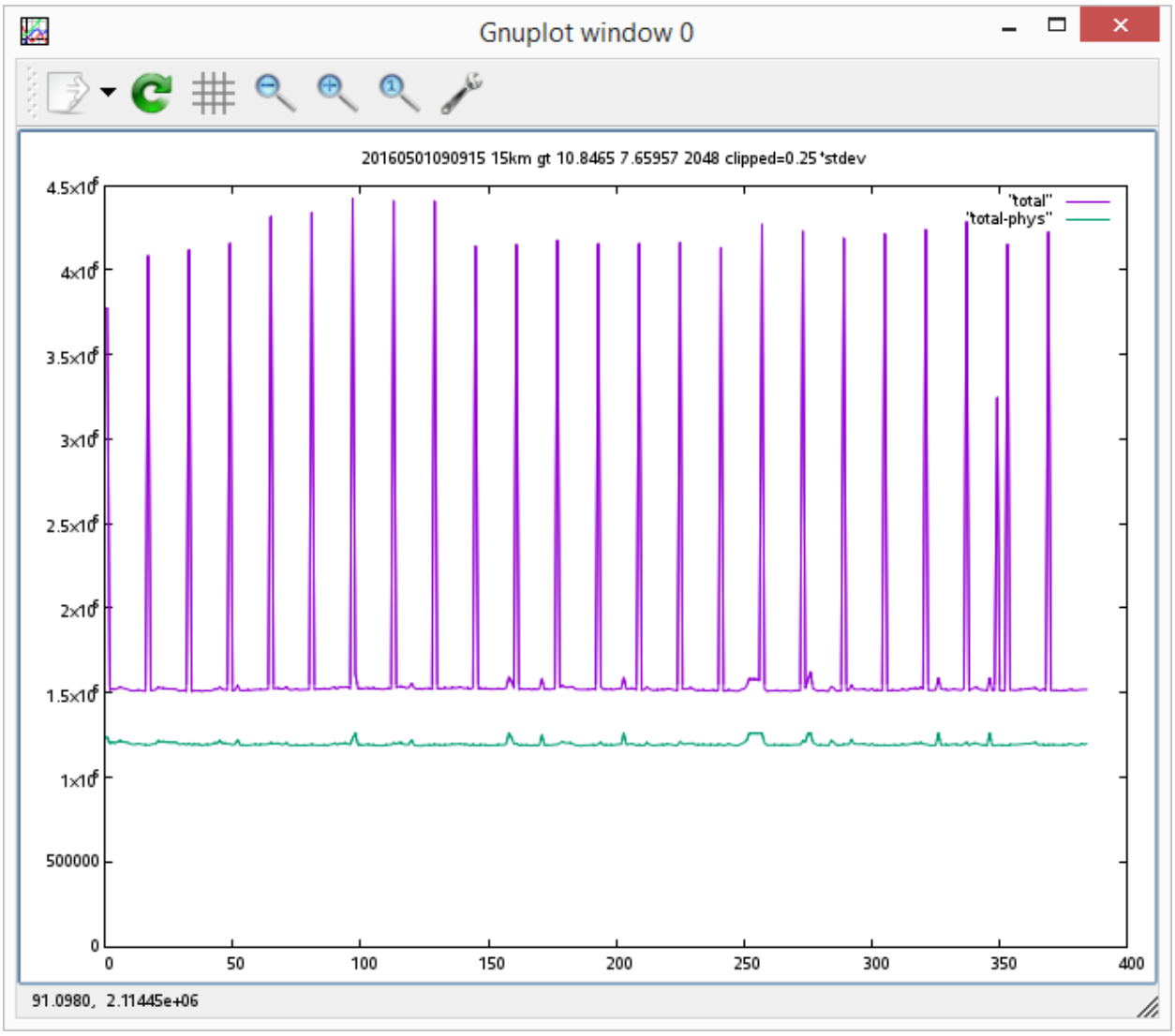
Mpas_15km_gt (1st) 2048 tasks


Gnuplot window 0
20160501072216 15km gt 10.9096 7.78384 2048
'total'
'total-phys'
5x10^6
4.5x10^6
4x10^6
3.5x10^6
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
170.073, -104676.

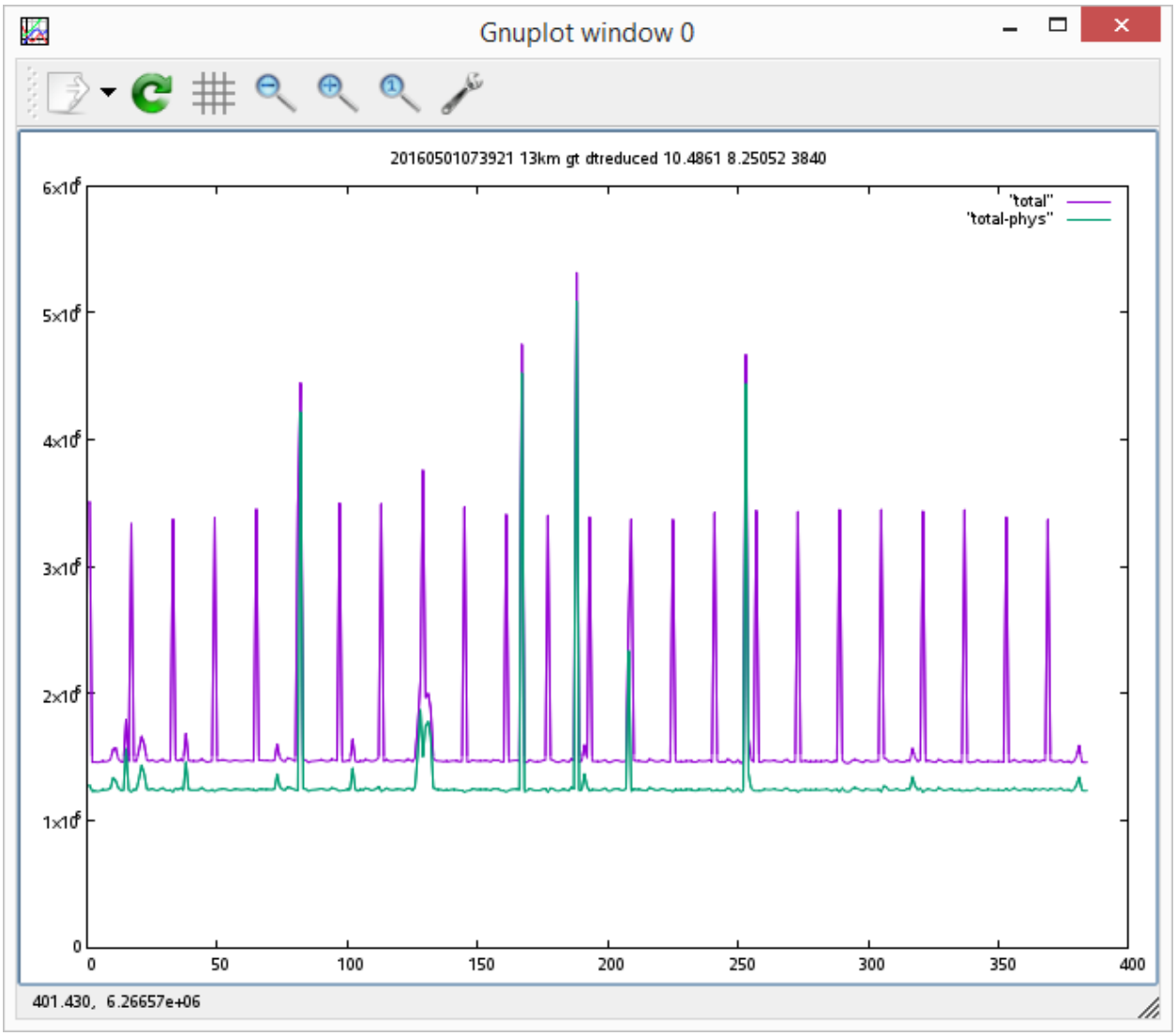


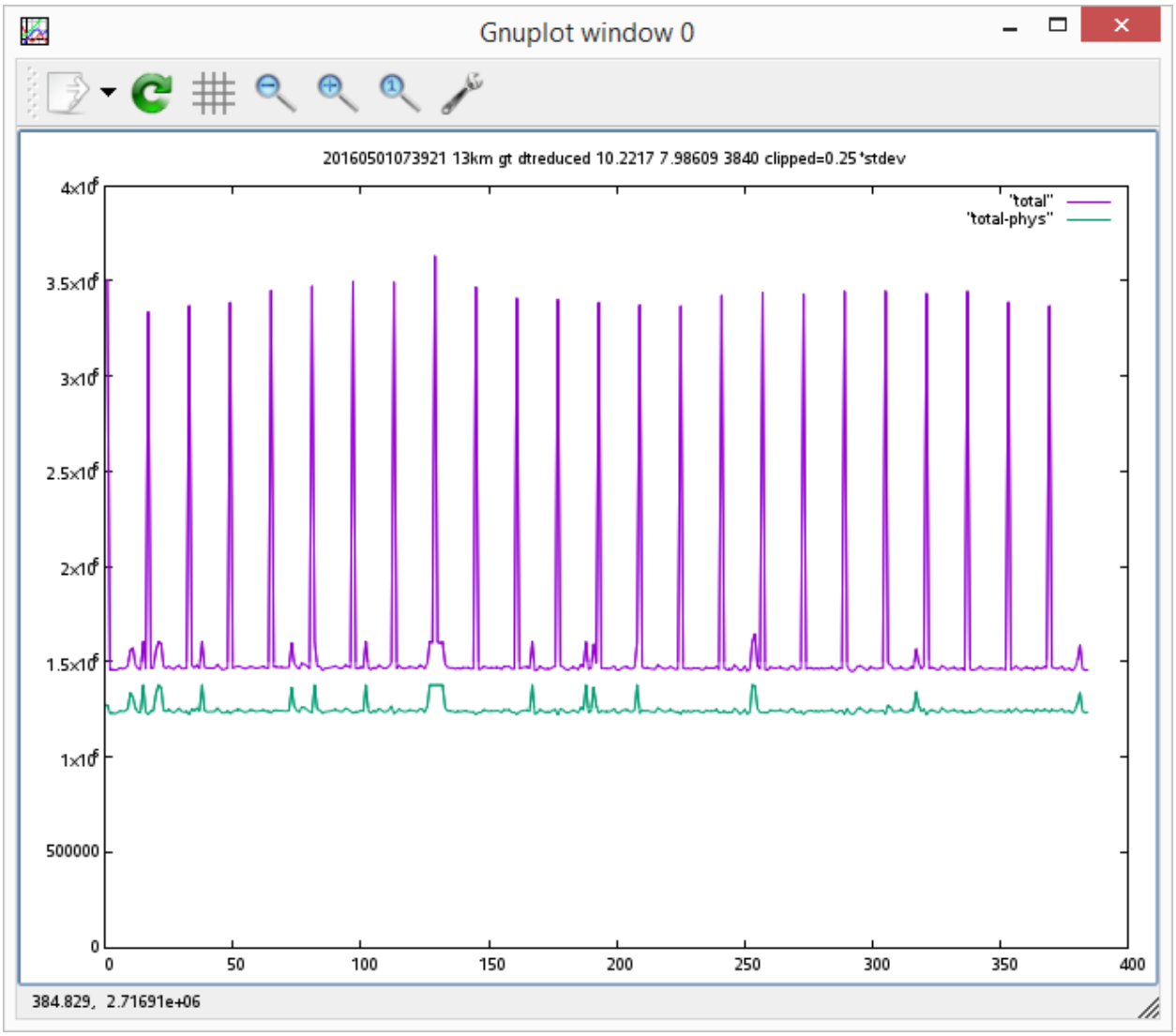
Mpas_15km_gt (2nd) 2048 tasks

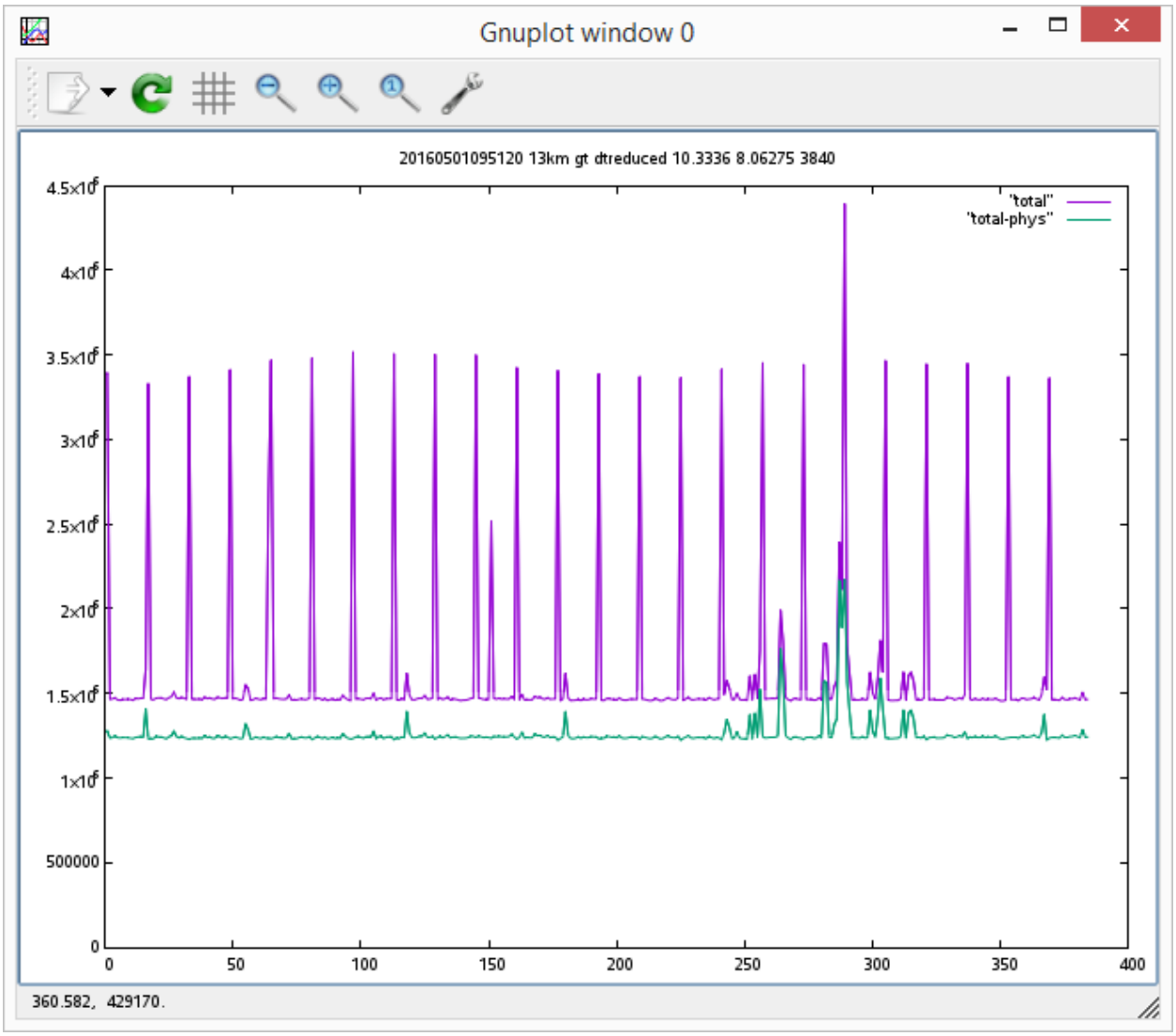

Gnuplot window 0
20160501090915 15km gt 10.9473 7.7604 2048
'total'
'total-phys'
5x10^6
4.5x10^6
4x10^6
3.5x10^6
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
-20.4364, 2.33775e+06

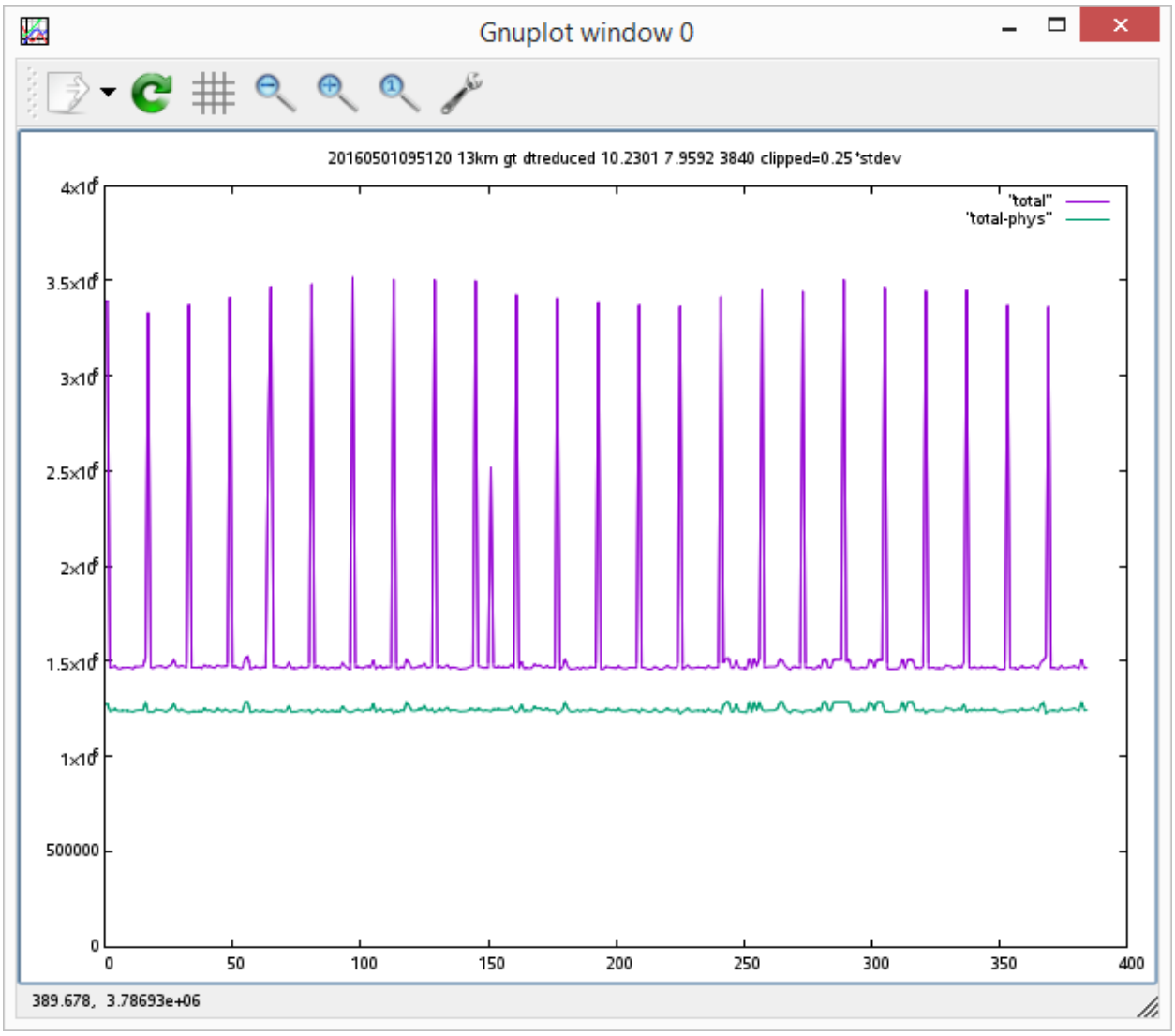


13km gt reduced 3840

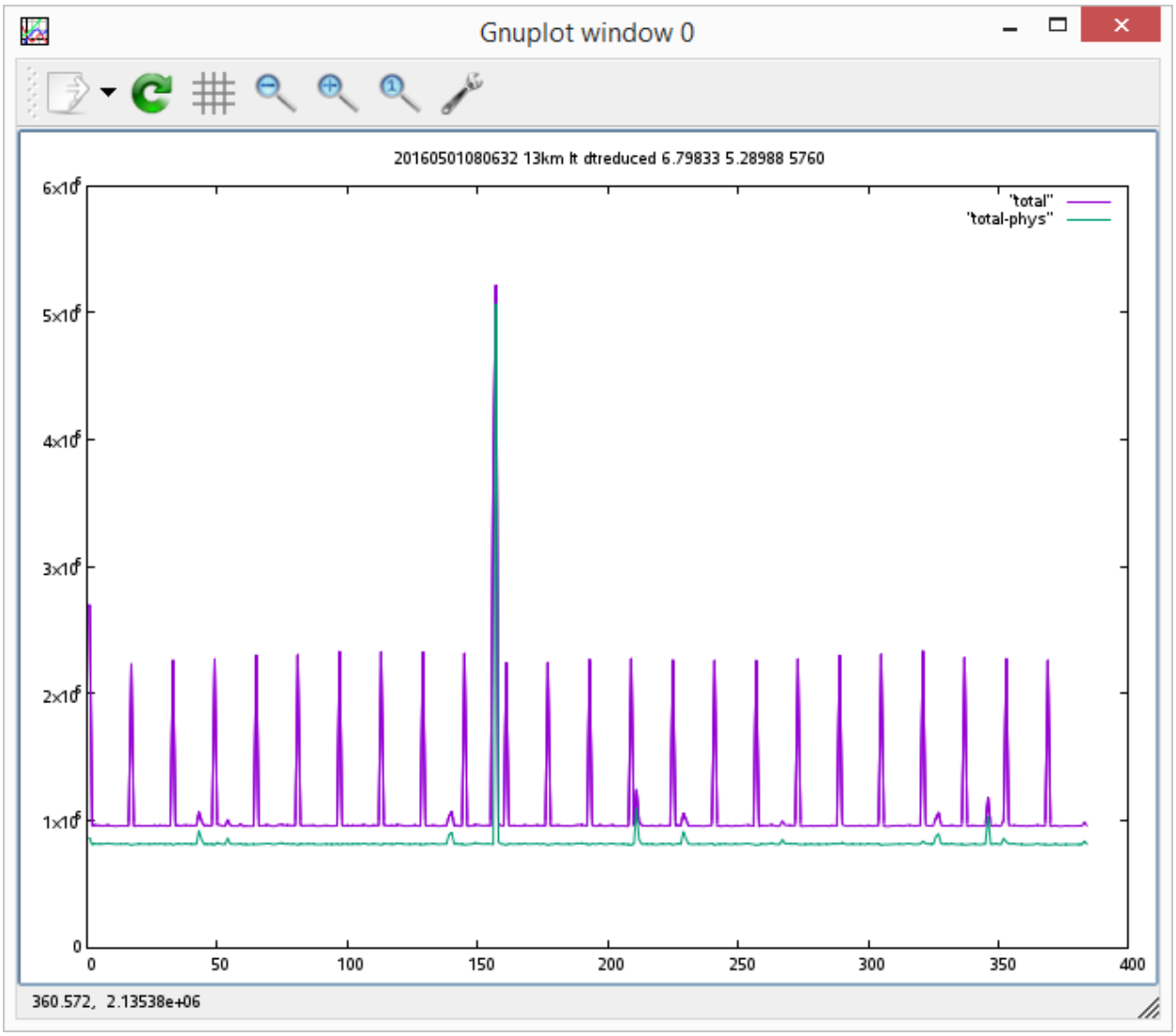

Gnuplot window 0
20160501073921 13km gt dtreduced 10.4861 8.25052 3840
'total'
'total-phys'
6x10^6
5x10^6
4x10^6
3x10^6
2x10^6
1x10^6
0
0
50
100
150
200
250
300
350
400
401.430, 6.26657e+06

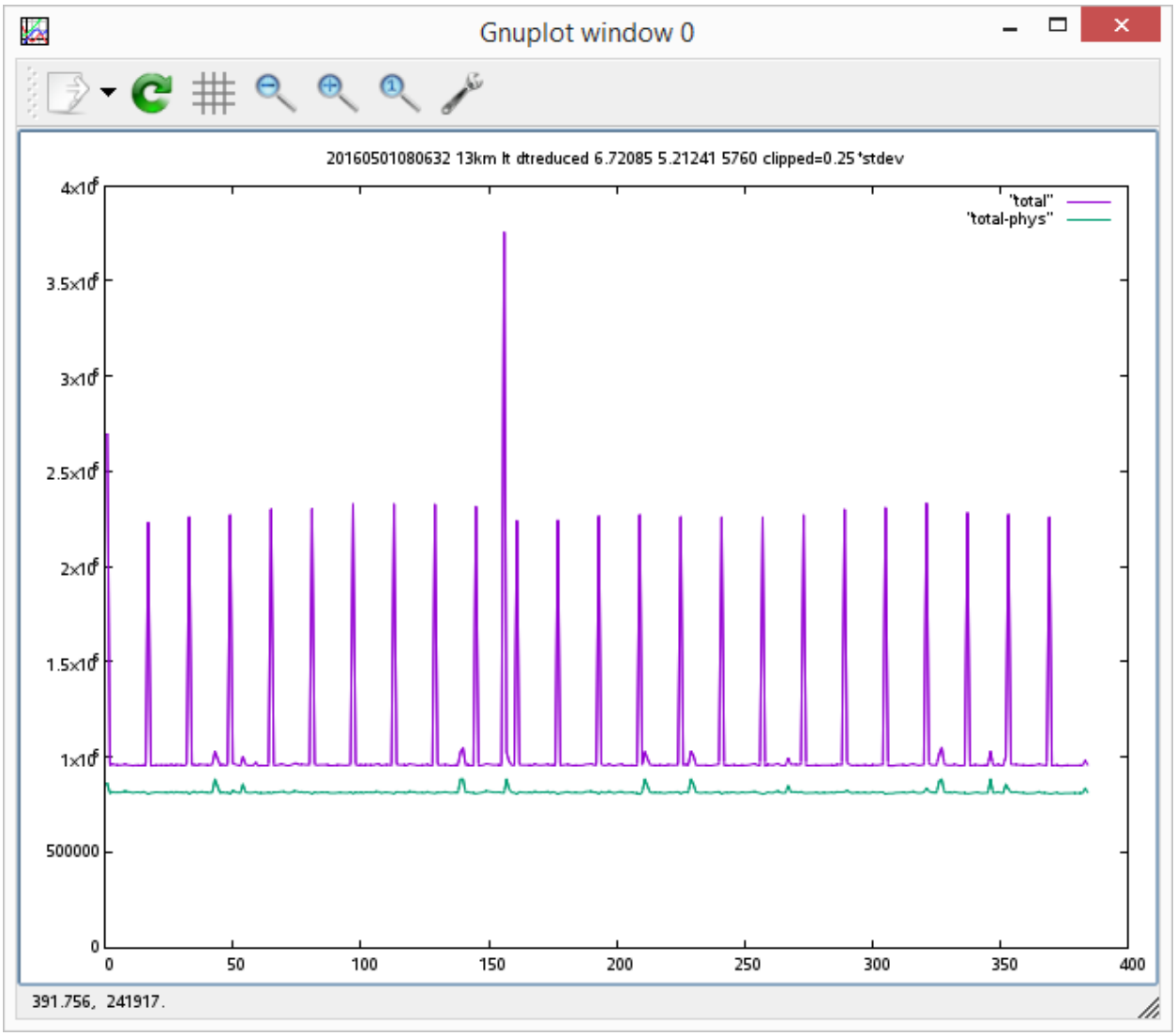

Gnuplot window 0
20160501073921 13km gt dtreduced 10.2217 7.98609 3840 clipped=0.25*stdev
'total'
'total-phys'
4x10^6
3.5x10^6
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
384.829, 2.71691e+06

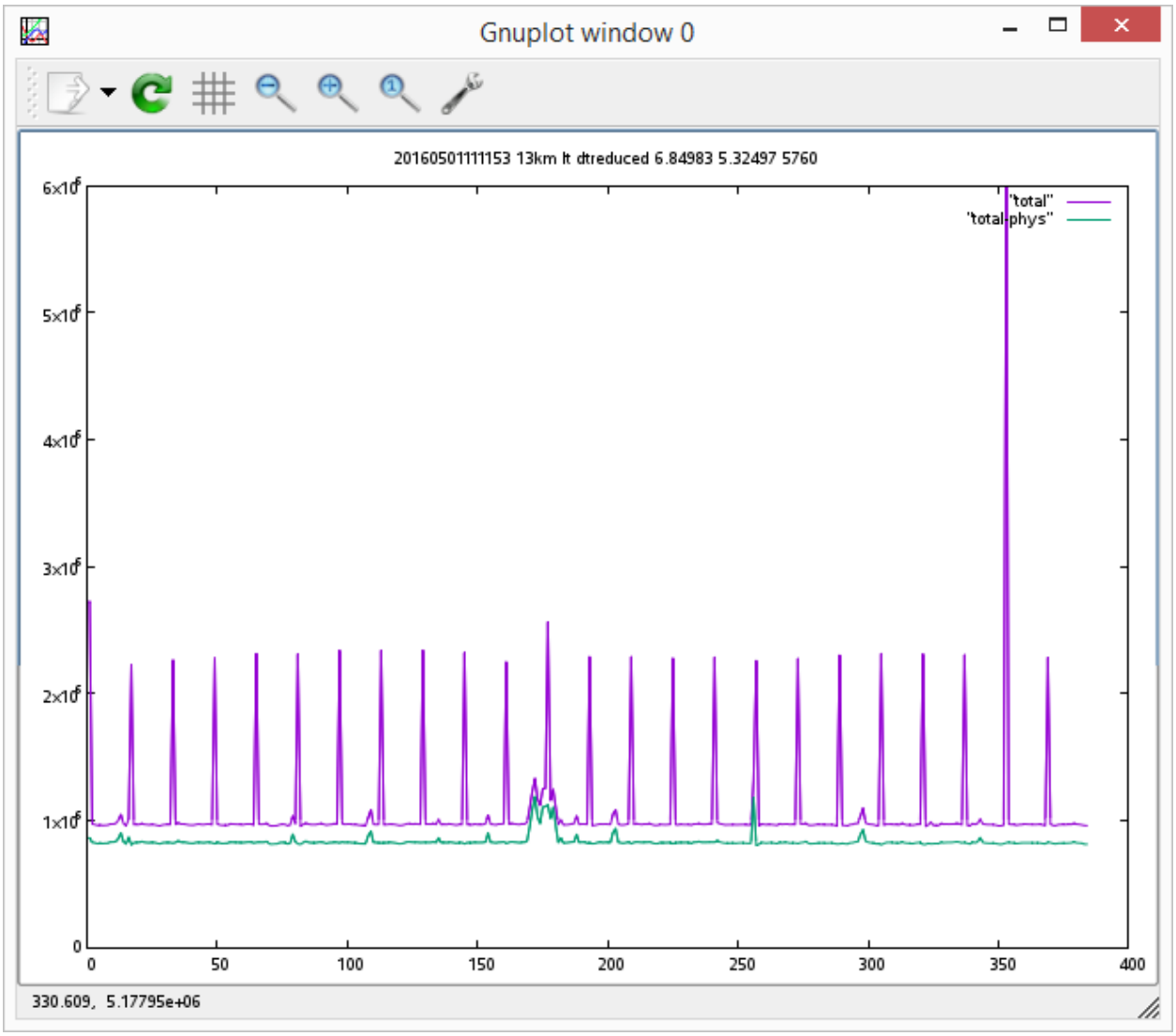

Gnuplot window 0
20160501095120 13km gt dtreduced 10.3336 8.06275 3840
"total"
"total-phys"
4.5x10^6
4x10^6
3.5x10^6
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
360.582, 429170.

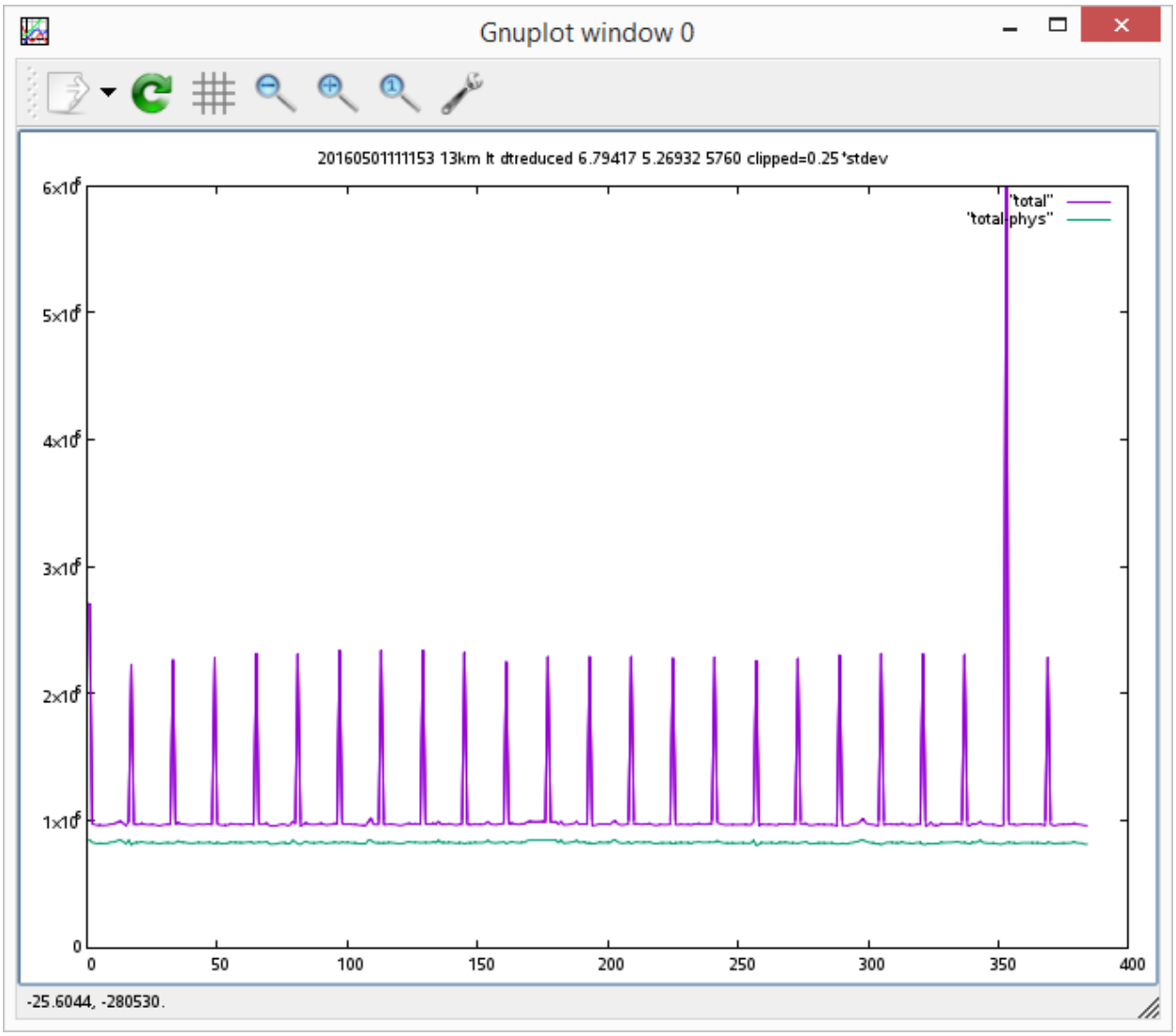


13km dtreduced 5760


Gnuplot window 0
20160501080632 13km lt dtreduced 6.79833 5.28988 5760
'total'
'total-phys'
6x10^6
5x10^6
4x10^6
3x10^6
2x10^6
1x10^6
0
0
50
100
150
200
250
300
350
400
360.572, 2.13538e+06


Gnuplot window 0
20160501080632 13km lt dtreduced 6.72085 5.21241 5760 clipped=0.25 *stdev
"total"
"total-phys"
4x10^6
3.5x10^6
3x10^6
2.5x10^6
2x10^6
1.5x10^6
1x10^6
500000
0
0
50
100
150
200
250
300
350
400
391.756, 241917.


Gnuplot window 0
20160501111153 13km lt dtreduced 6.84983 5.32497 5760
"total"
"total-phys"
6x10^6
5x10^6
4x10^6
3x10^6
2x10^6
1x10^6
0
0
50
100
150
200
250
300
350
400
330.609, 5.17795e+06


Gnuplot window 0
20160501111153 13km lt dtreduced 6.79417 5.26932 5760 clipped=0.25*stdev
"total"
"total-phys"
6x10^6
5x10^6
4x10^6
3x10^6
2x10^6
1x10^6
0
0
50
100
150
200
250
300
350
400
-25.6044, -280530.