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Intel Core i7-10700T testing with a Logic Supply RXM-181 (Z01-0002A026 BIOS) and Intel UHD 630 3GB on Ubuntu 20.10 via the Phoronix Test Suite.

Automated Executive Summary

2 had the most wins, coming in first place for 42% of the tests.

Based on the geometric mean of all complete results, the fastest (1) was 1.007x the speed of the slowest (5). 2 was 0.998x the speed of 1, 4 was 1x the speed of 2, 3 was 1x the speed of 4, 5 was 0.996x the speed of 3.

Test Systems:

1

2

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3

4

5

Processor: Intel Core i7-10700T @ 4.50GHz (8 Cores / 16 Threads), Motherboard: Logic Supply RXM-181 (Z01-0002A026 BIOS), Chipset: Intel Comet Lake PCH, Memory: 32GB, Disk: 256GB TS256GMTS800, Graphics: Intel UHD 630 3GB (1200MHz), Audio: Realtek ALC233, Monitor: DELL P2415Q, Network: Intel I219-LM + Intel I210

OS: Ubuntu 20.10, Kernel: 5.8.0-38-generic (x86_64), Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: modesetting 1.20.9, OpenGL: 4.6 Mesa 20.2.1, Vulkan: 1.2.145, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 1920x1080

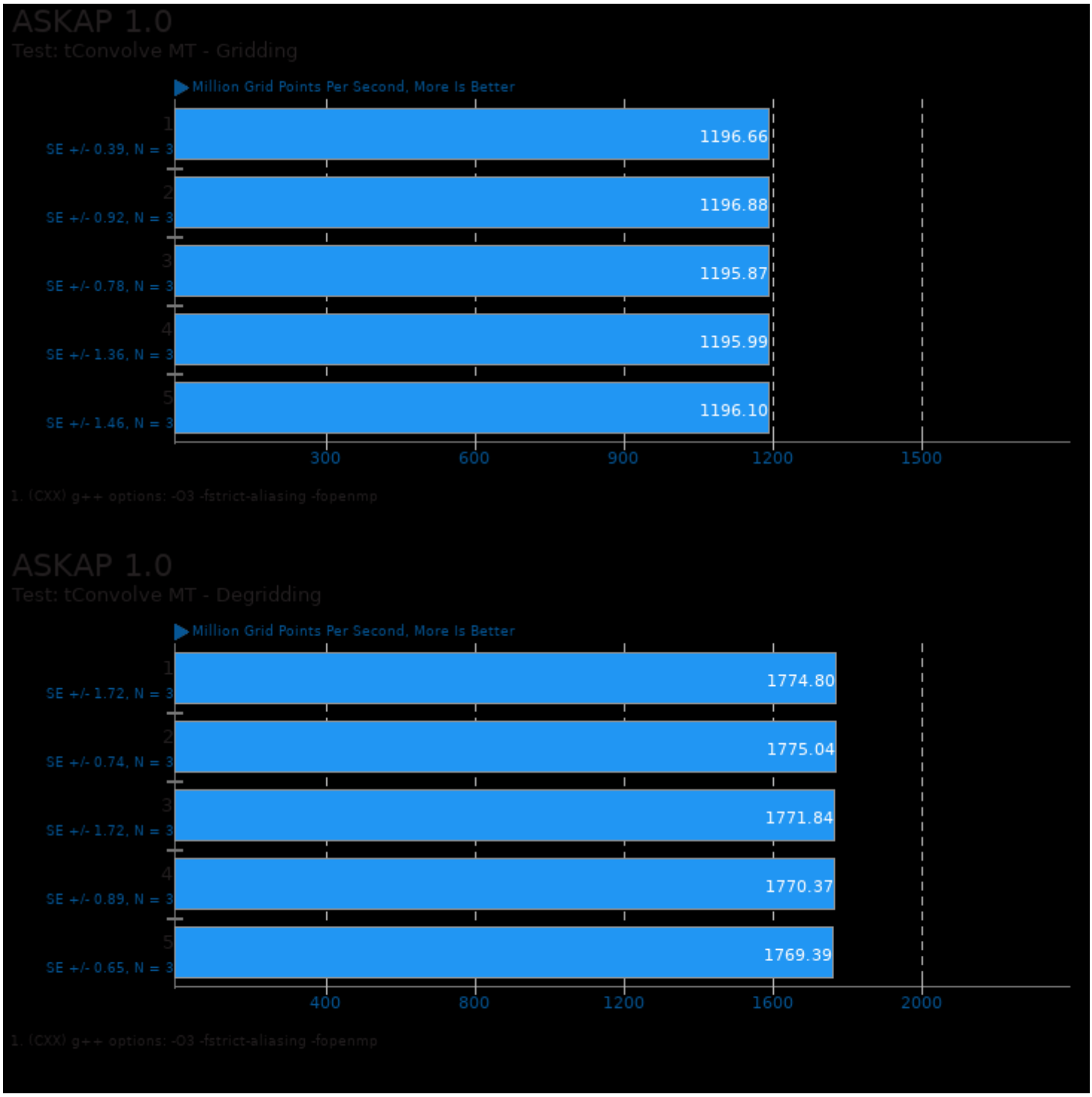
Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-JvwpWM/gcc-10-10.2.0/debian/tmp-gcn/usr,hsa --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Processor Notes: Scaling Governor: intel_pstate powersave - CPU Microcode: 0xe0 - Thermald 2.3
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	1	2	3	4	5
ASKAP - tConvolve MT - Gridding (Million Grid	1197	**1197**	**1196**	1196	1196
Normalized	99.98%	100%	99.92%	99.93%	99.93%
Standard Deviation	0.1%	0.1%	0.1%	0.2%	0.2%
ASKAP - tConvolve MT - Degridding (Million Grid	1775	**1775**	1772	1770	**1769**
Normalized	99.99%	100%	99.82%	99.74%	99.68%
Standard Deviation	0.2%	0.1%	0.2%	0.1%	0.1%
ASKAP - tConvolve MPI - Degridding (Mpix/sec)	**1777**	**1777**	1765	1773	**1738**
Normalized	100%	100%	99.33%	99.77%	97.82%
Standard Deviation	0.4%	0.4%	0.4%	0%	2%
ASKAP - tConvolve MPI - Gridding (Mpix/sec)	**1939**	1915	1929	1934	**1902**
Normalized	100%	98.78%	99.5%	99.75%	98.09%
Standard Deviation	1.1%	0.7%	0.7%	0.4%	2.2%
ASKAP - tConvolve OpenMP - Gridding (Million Grid	**1368**	1358	1354	**1352**	1358
Normalized	100%	99.32%	98.98%	98.81%	99.32%
Standard Deviation	0.8%	0%	0.8%	0.5%	0.5%
ASKAP - tConvolve OpenMP - Degridding (Million Grid	**2130**	**2136**	**2130**	**2130**	**2130**
Normalized	99.73%	100%	99.73%	99.73%	99.73%
Standard Deviation	0%	0.9%	0%	0%	0%

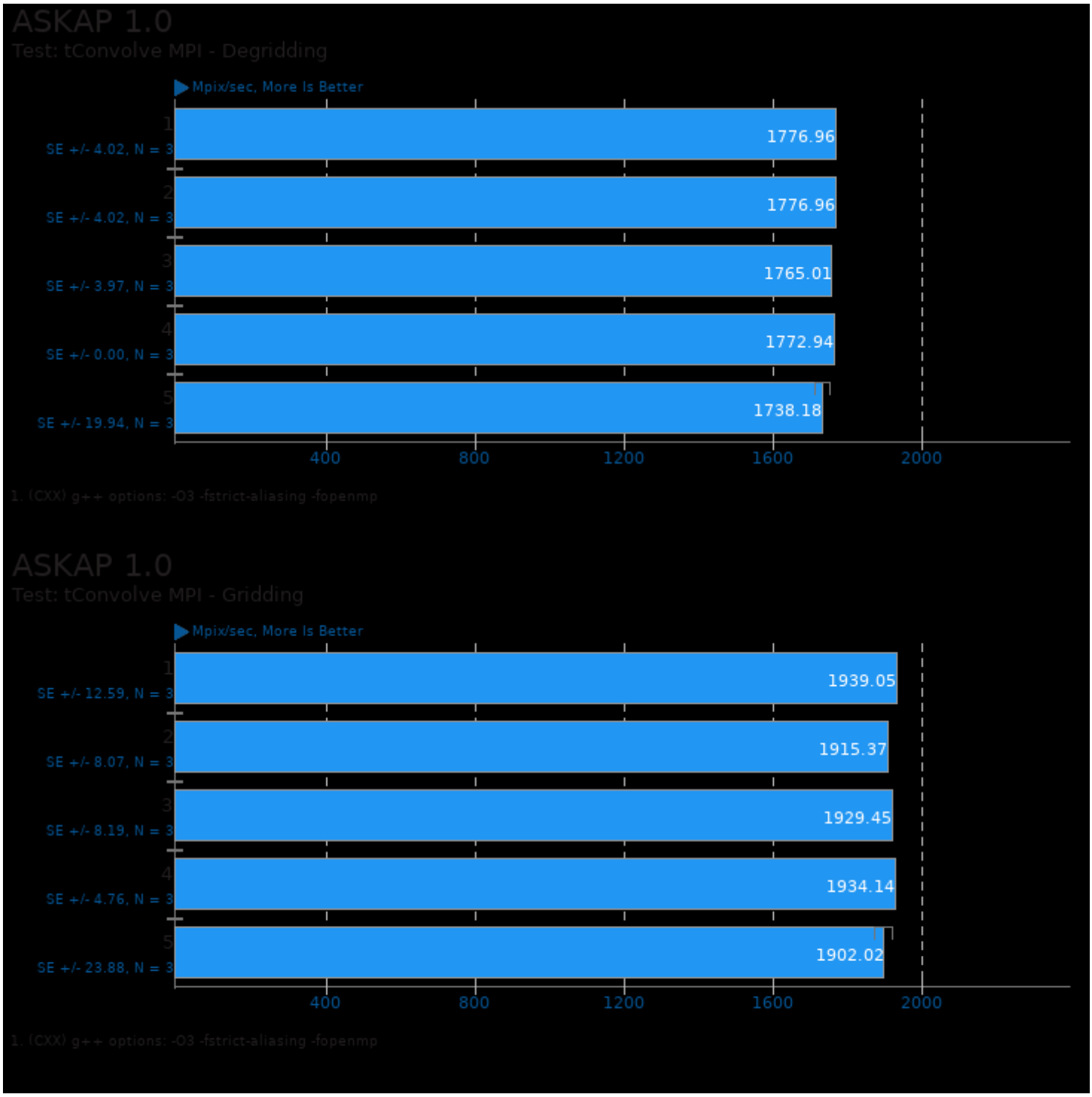
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ASKAP - H.C.O (Iterations/sec)	192.308	192.929	193.798	193.427	193.424
Normalized	99.23%	99.55%	100%	99.81%	99.81%
Standard Deviation	0%	0.4%	0%	0.5%	0%

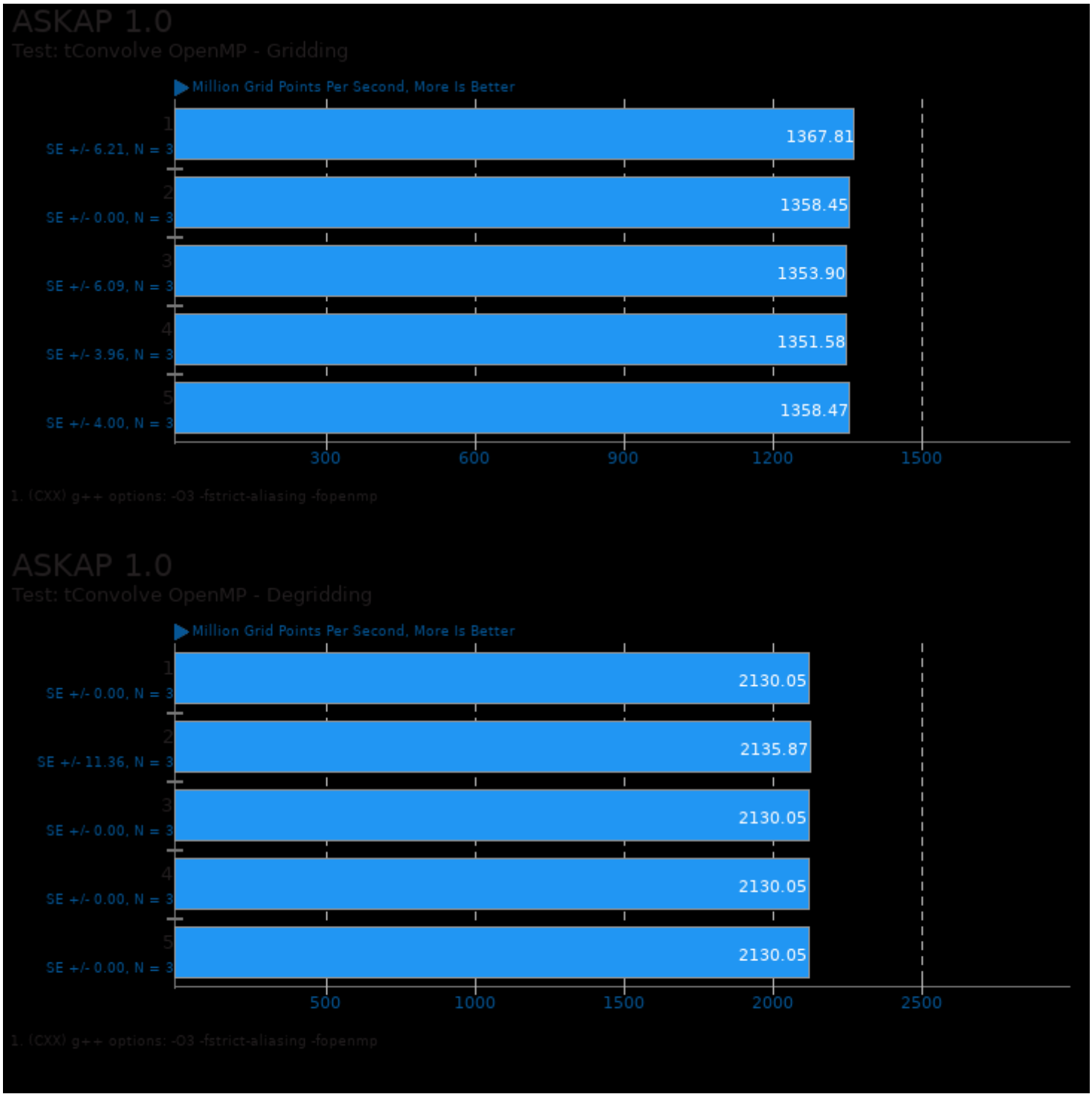
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ASKAP 1.0
Test: tConvolve MT - Gridding
Million Grid Points Per Second, More Is Better
1
SE +/- 0.39, N = 3
1196.66
2
SE +/- 0.92, N = 3
1196.88
3
SE +/- 0.78, N = 3
1195.87
4
SE +/- 1.36, N = 3
1195.99
5
SE +/- 1.46, N = 3
1196.10
300
600
900
1200
1500
1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp
ASKAP 1.0
Test: tConvolve MT - Degridding
Million Grid Points Per Second, More Is Better
1
SE +/- 1.72, N = 3
1774.80
2
SE +/- 0.74, N = 3
1775.04
3
SE +/- 1.72, N = 3
1771.84
4
SE +/- 0.89, N = 3
1770.37
5
SE +/- 0.65, N = 3
1769.39
400
800
1200
1600
2000
1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp

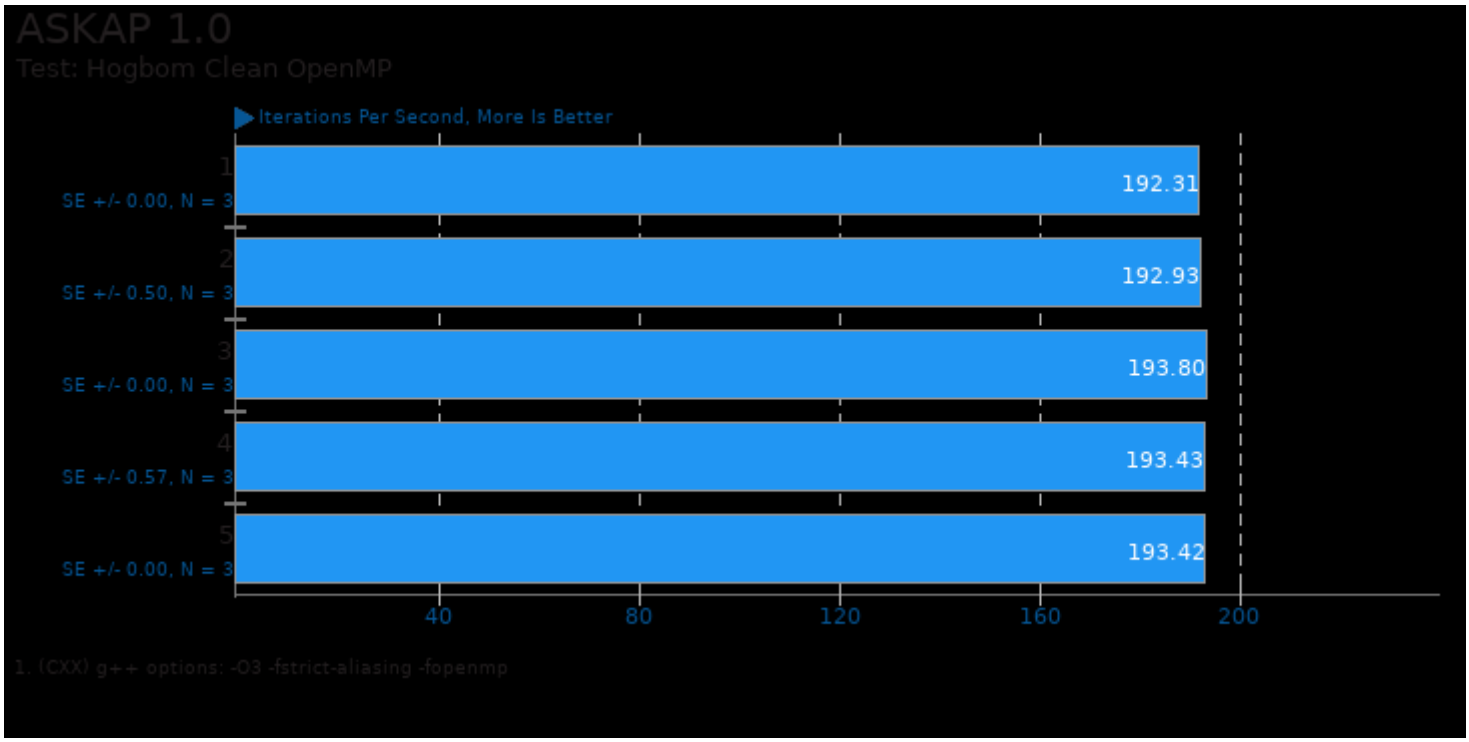
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ASKAP 1.0
Test: tConvolve MPI - Degridding
Mpix/sec, More Is Better
1
SE +/- 4.02, N = 3
1776.96
2
SE +/- 4.02, N = 3
1776.96
3
SE +/- 3.97, N = 3
1765.01
4
SE +/- 0.00, N = 3
1772.94
5
SE +/- 19.94, N = 3
1738.18
400
800
1200
1600
2000
1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp
ASKAP 1.0
Test: tConvolve MPI - Gridding
Mpix/sec, More Is Better
1
SE +/- 12.59, N = 3
1939.05
2
SE +/- 8.07, N = 3
1915.37
3
SE +/- 8.19, N = 3
1929.45
4
SE +/- 4.76, N = 3
1934.14
5
SE +/- 23.88, N = 3
1902.02
400
800
1200
1600
2000
1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp

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ASKAP 1.0
Test: tConvolve OpenMP - Gridding
Million Grid Points Per Second, More Is Better
1
SE +/- 6.21, N = 3
1367.81
2
SE +/- 0.00, N = 3
1358.45
3
SE +/- 6.09, N = 3
1353.90
4
SE +/- 3.96, N = 3
1351.58
5
SE +/- 4.00, N = 3
1358.47
300
600
900
1200
1500
1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp
ASKAP 1.0
Test: tConvolve OpenMP - Degridding
Million Grid Points Per Second, More Is Better
1
SE +/- 0.00, N = 3
2130.05
2
SE +/- 11.36, N = 3
2135.87
3
SE +/- 0.00, N = 3
2130.05
4
SE +/- 0.00, N = 3
2130.05
5
SE +/- 0.00, N = 3
2130.05
500
1000
1500
2000
2500
1. (CXX) g++ options: -O3 -fstrict-aliasing -fopenmp

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