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AMD Ryzen 9 3900XT 12-Core testing with a MSI MEG X570 GODLIKE (MS-7C34) v1.0 (1.B3 BIOS) and AMD Radeon RX 56/64 8GB on Ubuntu 20.10 via the Phoronix Test Suite.

Automated Executive Summary

1 had the most wins, coming in first place for 55% of the tests.

Test Systems:

1

2

3

4

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Processor: AMD Ryzen 9 3900XT 12-Core @ 3.80GHz (12 Cores / 24 Threads), Motherboard: MSI MEG X570 GODLIKE (MS-7C34) v1.0 (1.B3 BIOS), Chipset: AMD Starship/Matisse, Memory: 16GB, Disk: 500GB Seagate FireCuda 520 SSD ZP500GM30002, Graphics: AMD Radeon RX 56/64 8GB (1630/945MHz), Audio: AMD Vega 10 HDMI Audio, Monitor: ASUS MG28U, Network: Realtek Device 2600 + Realtek Device 3000 + Intel Wi-Fi 6 AX200

OS: Ubuntu 20.10, Kernel: 5.11.0-rc1-phx (x86_64) 20201228, Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9, Display Driver: amdgpu 19.1.0, OpenGL: 4.6 Mesa 20.2.1 (LLVM 11.0.0), Vulkan: 1.2.131, Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 3840x2160

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: acpi-cpufreq schedutil (Boost: Enabled) - CPU Microcode: 0x8701021
Python Notes: Python 2.7.18 + Python 3.8.6
Security Notes: itlb_multihit: Not affected + 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 Full AMD retpoline IBPB: conditional STIBP: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

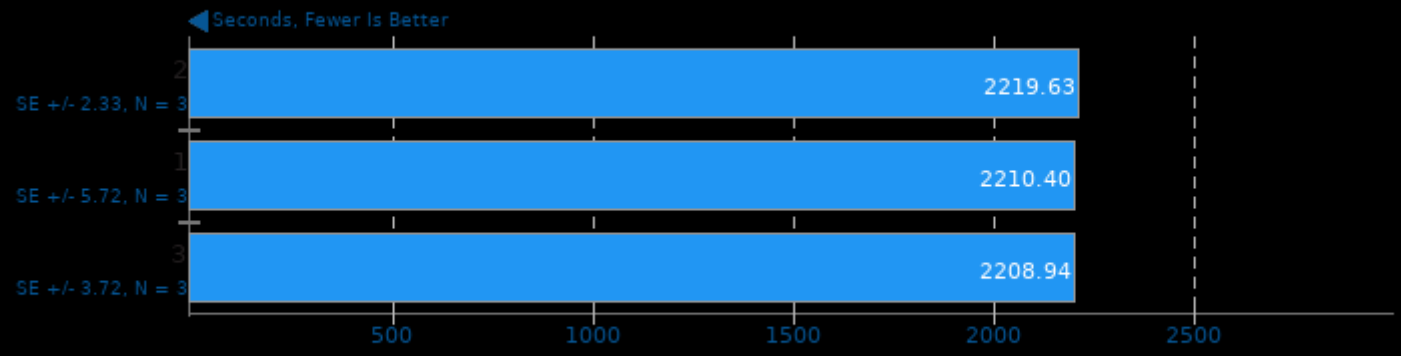
	1	2	3	4
RELION - Basic - CPU (sec)	2210	**2220**	**2209**	
Normalized	99.93%	99.52%	100%	
Standard Deviation	0.4%	0.2%	0.3%	
CloverLeaf - L.E.H (sec)	**130.70**	**134.67**	132.64	132.41
Normalized	100%	97.05%	98.54%	98.71%
Standard Deviation	0.1%	0.2%	0.1%	0.1%
ONNX Runtime - fcn-resnet101-11 - OpenMP CPU (Inferences/min)	71	71	71	
Standard Deviation	0%	0.4%	0.4%	
ONNX Runtime - bertsquad-10 - OpenMP CPU (Inferences/min)	**496**	487	**478**	
Normalized	100%	98.19%	96.37%	
Standard Deviation	0.3%	1.8%	0.7%	
ONNX Runtime - yolov4 - OpenMP CPU (Inferences/min)	**309**	**309**	**310**	
Normalized	99.68%	99.68%	100%	
Standard Deviation	0.3%	0.1%	0.4%	
ONNX Runtime - shufflenet-v2-10 - OpenMP CPU (Inferences/min)	**13621**	13535	**13533**	
Normalized	100%	99.37%	99.35%	
Standard Deviation	0.8%	1%	1.8%	
ONNX Runtime - super-resolution-10 - OpenMP CPU (Inferences/min)	4973	**4949**	**5002**	
Normalized	99.42%	98.94%	100%	
Standard Deviation	1.2%	1.1%	2.3%	
Timed Godot Game Engine Compilation - Time To Compile (sec)	**101.126**	101.269	**101.567**	
Normalized	100%	99.86%	99.57%	
Standard Deviation	0.3%	0.2%	0.2%	

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Google SynthMark - VoiceMark_100 (Voices)	873.571	**896.435**	**860.391**
Normalized	97.45%	100%	95.98%
Standard Deviation	2.4%	1.9%	2.7%

RELION 3.1.1

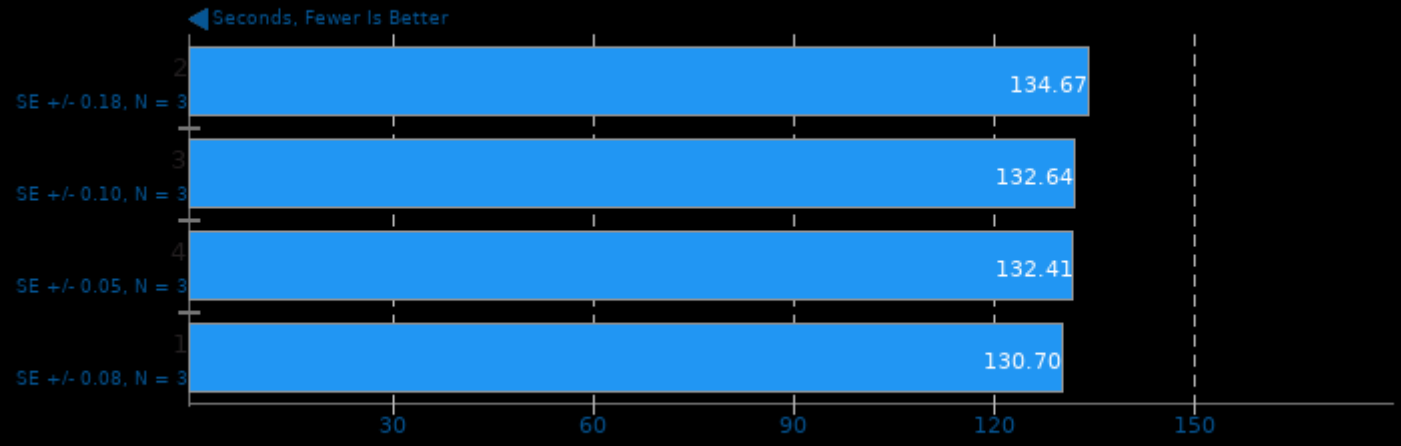
Test: Basic - Device: CPU



1. (CXX) g++ options: -fopenmp -std=c++0x -O3 -rdynamic -ldl -ltiff -lfftw3f -lfftw3 -lpng -pthread -lmpi_cxx -lmpi

CloverLeaf

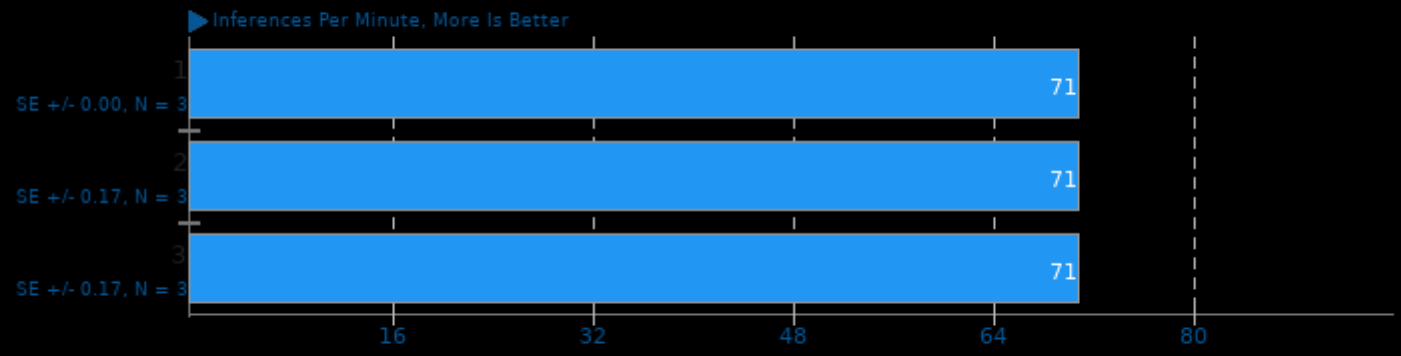
Lagrangian-Eulerian Hydrodynamics



1. (F9X) gfortran options: -O3 -march=native -funroll-loops -fopenmp

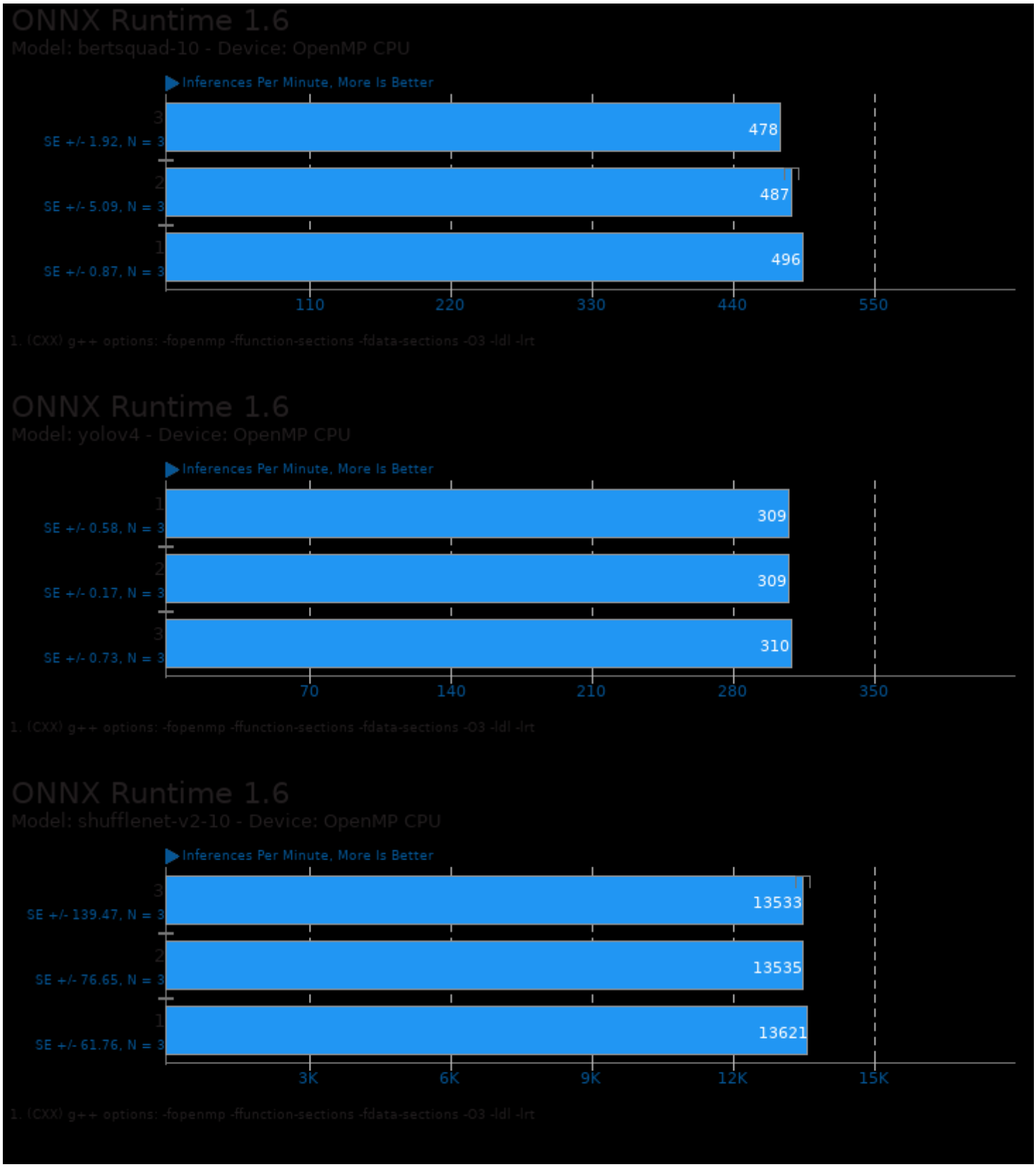
ONNX Runtime 1.6

Model: fcn-resnet101-11 - Device: OpenMP CPU

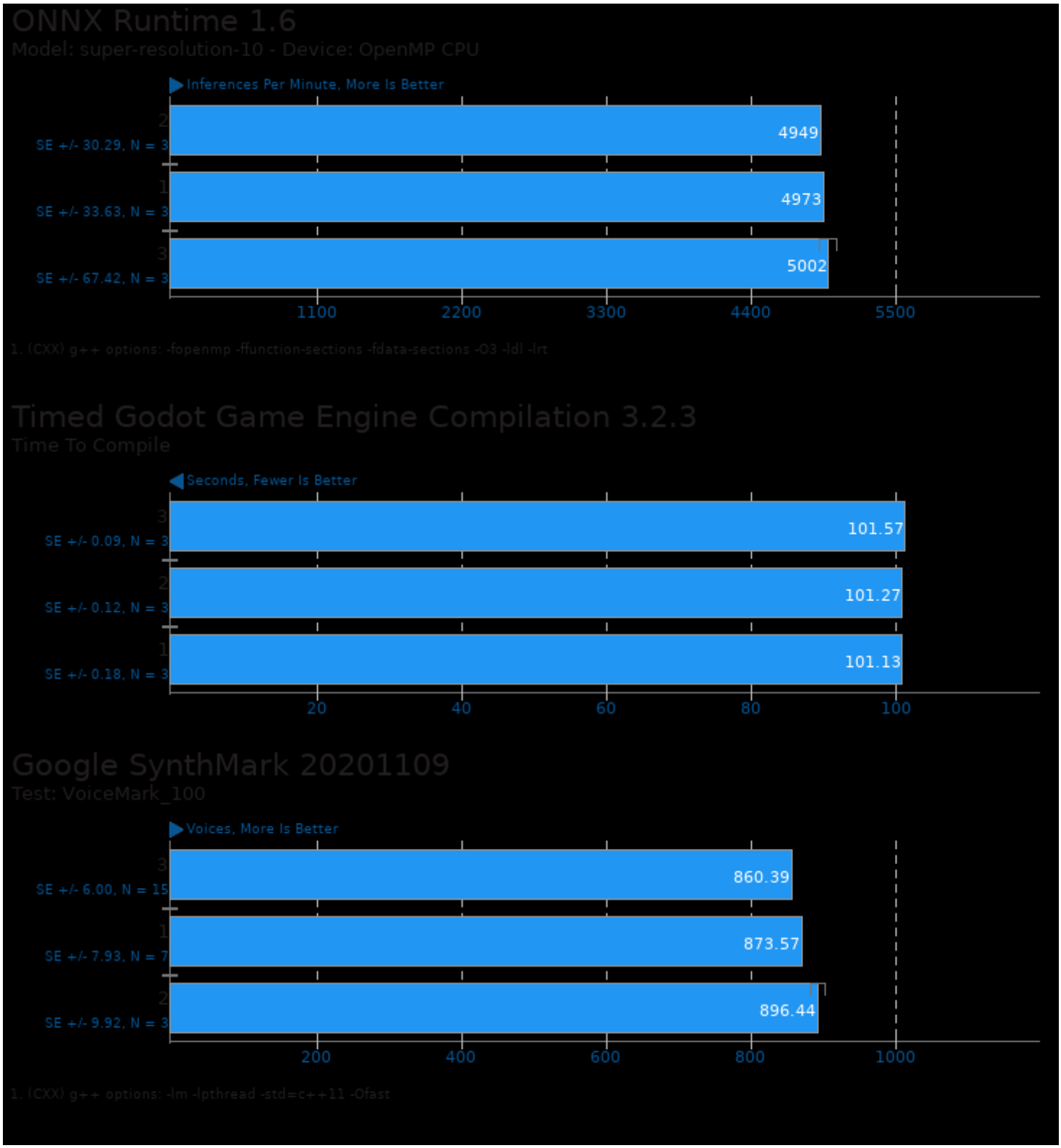


1. (CXX) g++ options: -fopenmp -ffunction-sections -fdata-sections -O3 -ldl -lrt

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ONNX Runtime 1.6
Model: bertsquad-10 - Device: OpenMP CPU
Inferences Per Minute, More Is Better
3
SE +/- 1.92, N = 3
478
2
SE +/- 5.09, N = 3
487
1
SE +/- 0.87, N = 3
496
110
220
330
440
550
1. (CXX) g++ options: -fopenmp -ffunction-sections -fdata-sections -O3 -ldl -lrt
ONNX Runtime 1.6
Model: yolov4 - Device: OpenMP CPU
Inferences Per Minute, More Is Better
1
SE +/- 0.58, N = 3
309
2
SE +/- 0.17, N = 3
309
3
SE +/- 0.73, N = 3
310
70
140
210
280
350
1. (CXX) g++ options: -fopenmp -ffunction-sections -fdata-sections -O3 -ldl -lrt
ONNX Runtime 1.6
Model: shufflenet-v2-10 - Device: OpenMP CPU
Inferences Per Minute, More Is Better
3
SE +/- 139.47, N = 3
13533
2
SE +/- 76.65, N = 3
13535
1
SE +/- 61.76, N = 3
13621
3K
6K
9K
12K
15K
1. (CXX) g++ options: -fopenmp -ffunction-sections -fdata-sections -O3 -ldl -lrt

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