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pyhpc rocket

Intel Core i9-11900K testing with a ASUS ROG MAXIMUS XIII HERO (1007 BIOS) and AMD Radeon VII 16GB on Clear Linux OS 35150 via the Phoronix Test Suite.

Automated Executive Summary

1 had the most wins, coming in first place for 85% of the tests.

Based on the geometric mean of all complete results, the fastest (3) was 1.008x the speed of the slowest (2). 1 was 0.999x the speed of 3 and 2 was 0.993x the speed of 1.

The results with the greatest spread from best to worst included:

PyHPC Benchmarks (Device: CPU - Backend: Numpy - Project Size: 262144 - Benchmark: Equation of State) at 1.255x
PyHPC Benchmarks (Device: CPU - Backend: Numpy - Project Size: 65536 - Benchmark: Isoneutral Mixing) at 1.045x
PyHPC Benchmarks (Device: CPU - Backend: Numba - Project Size: 262144 - Benchmark: Isoneutral Mixing) at 1.044x
PyHPC Benchmarks (Device: CPU - Backend: Numba - Project Size: 4194304 - Benchmark: Equation of State) at 1.024x
PyHPC Benchmarks (Device: CPU - Backend: Numpy - Project Size: 262144 - Benchmark: Isoneutral Mixing) at 1.022x
PyHPC Benchmarks (Device: CPU - Backend: Numpy - Project Size: 1048576 - Benchmark: Isoneutral Mixing) at 1.005x
PyHPC Benchmarks (Device: CPU - Backend: Numpy - Project Size: 1048576 - Benchmark: Equation of State) at

1.004x
PyHPC Benchmarks (Device: CPU - Backend: Numba - Project Size: 4194304 - Benchmark: Isoneutral Mixing) at 1.003x
PyHPC Benchmarks (Device: CPU - Backend: Numpy - Project Size: 4194304 - Benchmark: Equation of State) at 1.002x
PyHPC Benchmarks (Device: CPU - Backend: Numpy - Project Size: 4194304 - Benchmark: Isoneutral Mixing) at 1.002x.

Test Systems:

1

2

3

Processor: Intel Core i9-11900K @ 5.10GHz (8 Cores / 16 Threads), Motherboard: ASUS ROG MAXIMUS XIII HERO (1007 BIOS), Chipset: Intel Device 43ef, Memory: 32GB, Disk: 2000GB Corsair Force MP600 + 257GB Flash Drive, Graphics: AMD Radeon VII 16GB (1801/1000MHz), Audio: Intel Device 43c8, Monitor: ASUS MG28U, Network: 2 x Intel + Intel Device 2725

OS: Clear Linux OS 35150, Kernel: 5.14.13-1083.native (x86_64), Desktop: GNOME Shell 41.0, Display Server: X Server 1.20.11, OpenGL: 4.6 Mesa 21.2.4 (LLVM 11.1.0), Vulkan: 1.2.182, Compiler: GCC 11.2.1 20211015 releases/gcc-11.2.0-353-g6a936be4ad + Clang 11.1.0 + LLVM 11.1.0, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: always
Environment Notes: FFLAGS="-g -O3 -feliminate-unused-debug-types -pipe -Wall -Wp,-D_FORTIFY_SOURCE=2 -fexceptions -m64 -fasynchronous-unwind-tables -Wp,-D_REENTRANT -ftree-loop-distribute-patterns -Wl,-z -Wl,now -Wl,-z -Wl,relro -malign-data=abi -fno-semantic-interposition -ftree-vectorize -ftree-loop-vectorize -Wl,--enable-new-dtags" CXXFLAGS="-g -O3 -feliminate-unused-debug-types -pipe -Wall -Wp,-D_FORTIFY_SOURCE=2 -fexceptions -Wformat -Wformat-security -m64 -fasynchronous-unwind-tables -Wp,-D_REENTRANT -ftree-loop-distribute-patterns -Wl,-z -Wl,now -Wl,-z -Wl,relro -fno-semantic-interposition -ffat-lto-objects -fno-trapping-math -Wl,-sort-common -Wl,--enable-new-dtags -mtune=skylake -fvisibility-inlines-hidden -Wl,--enable-new-dtags" MESA_GLSL_CACHE_DISABLE=0 FCFLAGS="-g -O3 -feliminate-unused-debug-types -pipe -Wall -Wp,-D_FORTIFY_SOURCE=2 -fexceptions -m64 -fasynchronous-unwind-tables -Wp,-D_REENTRANT -ftree-loop-distribute-patterns -Wl,-z -Wl,now -Wl,-z -Wl,relro -malign-data=abi -fno-semantic-interposition -ftree-vectorize -ftree-loop-vectorize -Wl,-sort-common -Wl,--enable-new-dtags" CFLAGS="-g -O3 -feliminate-unused-debug-types -pipe -Wall -Wp,-D_FORTIFY_SOURCE=2 -fexceptions -Wformat -Wformat-security -m64 -fasynchronous-unwind-tables -Wp,-D_REENTRANT -ftree-loop-distribute-patterns -Wl,-z -Wl,now -Wl,-z -Wl,relro -fno-semantic-interposition -ffat-lto-objects -fno-trapping-math -Wl,-sort-common -Wl,--enable-new-dtags -mtune=skylake" THEANO_FLAGS="floatX=float32,openmp=true,gcc.cxxflags="-ftree-vectorize -mavx""
Processor Notes: Scaling Governor: intel_pstate performance - CPU Microcode: 0x40
Python Notes: Python 3.9.7
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 Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	1	2	3

PyHPC Benchmarks - CPU - JAX - 16384 - Isoneutral Mixing (sec)	0.002	0.002	0.002
PyHPC Benchmarks - CPU - JAX - 65536 - Isoneutral Mixing (sec)	0.01	0.01	0.01
PyHPC Benchmarks - CPU - JAX - 262144 - Equation of State (sec)	0.001	0.001	0.001
PyHPC Benchmarks - CPU - JAX - 262144 - Isoneutral Mixing (sec)	0.034	0.034	0.034
PyHPC Benchmarks - CPU - JAX - 1048576 - Equation of State (sec)	0.008	0.008	0.008
PyHPC Benchmarks - CPU - JAX - 1048576 - Isoneutral Mixing (sec)	0.141	0.141	0.141
PyHPC Benchmarks - CPU - JAX - 4194304 - Equation of State (sec)	0.032	0.032	0.032
PyHPC Benchmarks - CPU - JAX - 4194304 - Isoneutral Mixing (sec)	0.584	0.584	0.584
PyHPC Benchmarks - CPU - Numba - 16384 - Equation of State (sec)	0.001	0.001	0.001
PyHPC Benchmarks - CPU - Numba - 16384 - Isoneutral Mixing (sec)	0.003	0.003	0.003
PyHPC Benchmarks - CPU - Numba - 65536 - Equation of State (sec)	0.003	0.003	0.003
PyHPC Benchmarks - CPU - Numba - 65536 - Isoneutral Mixing (sec)	0.012	0.012	0.012
PyHPC Benchmarks - CPU - Numpy - 16384 - Equation of State (sec)	0.002	0.002	0.002
PyHPC Benchmarks - CPU - Numpy - 16384 - Isoneutral Mixing (sec)	0.005	0.005	0.005
PyHPC Benchmarks - CPU - Numpy - 65536 - Equation of State (sec)	0.013	0.013	0.013
PyHPC Benchmarks - CPU - Numpy - 65536 - Isoneutral Mixing (sec)	**0.023**	**0.022**	**0.022**
Normalized	95.65%	100%	100%
PyHPC Benchmarks - CPU - Numba - 262144 - Equation of State (sec)	0.01	0.01	0.01
PyHPC Benchmarks - CPU - Numba - 262144 - Isoneutral Mixing (sec)	**0.045**	0.046	**0.047**
Normalized	100%	97.83%	95.74%
PyHPC Benchmarks - CPU - Numpy - 262144 - Equation of State (sec)	**0.051**	**0.064**	**0.051**
Normalized	100%	79.69%	100%
PyHPC Benchmarks - CPU - Numpy - 262144 - Isoneutral Mixing (sec)	**0.091**	**0.089**	**0.089**
Normalized	97.8%	100%	100%
PyHPC Benchmarks - CPU - Numba - 1048576 - Equation of State (sec)	0.042	0.042	0.042

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PyHPC Benchmarks - CPU - Numba - 1048576 - Isoneutral Mixing (sec)	0.196	0.196	0.196
PyHPC Benchmarks - CPU - Numba - 4194304 - Equation of State (sec)	**0.167**	**0.171**	**0.167**
Normalized	100%	97.66%	100%
PyHPC Benchmarks - CPU - Numba - 4194304 - Isoneutral Mixing (sec)	**0.8**	**0.8**	**0.802**
Normalized	100%	100%	99.75%
PyHPC Benchmarks - CPU - Numpy - 1048576 - Equation of State (sec)	**0.239**	**0.239**	**0.24**
Normalized	100%	100%	99.58%
PyHPC Benchmarks - CPU - Numpy - 1048576 - Isoneutral Mixing (sec)	0.416	**0.417**	**0.415**
Normalized	99.76%	99.52%	100%
PyHPC Benchmarks - CPU - Numpy - 4194304 - Equation of State (sec)	**1.25**	**1.25**	**1.247**
Normalized	99.76%	99.76%	100%
PyHPC Benchmarks - CPU - Numpy - 4194304 - Isoneutral Mixing (sec)	**1.816**	1.817	**1.819**
Normalized	100%	99.94%	99.84%

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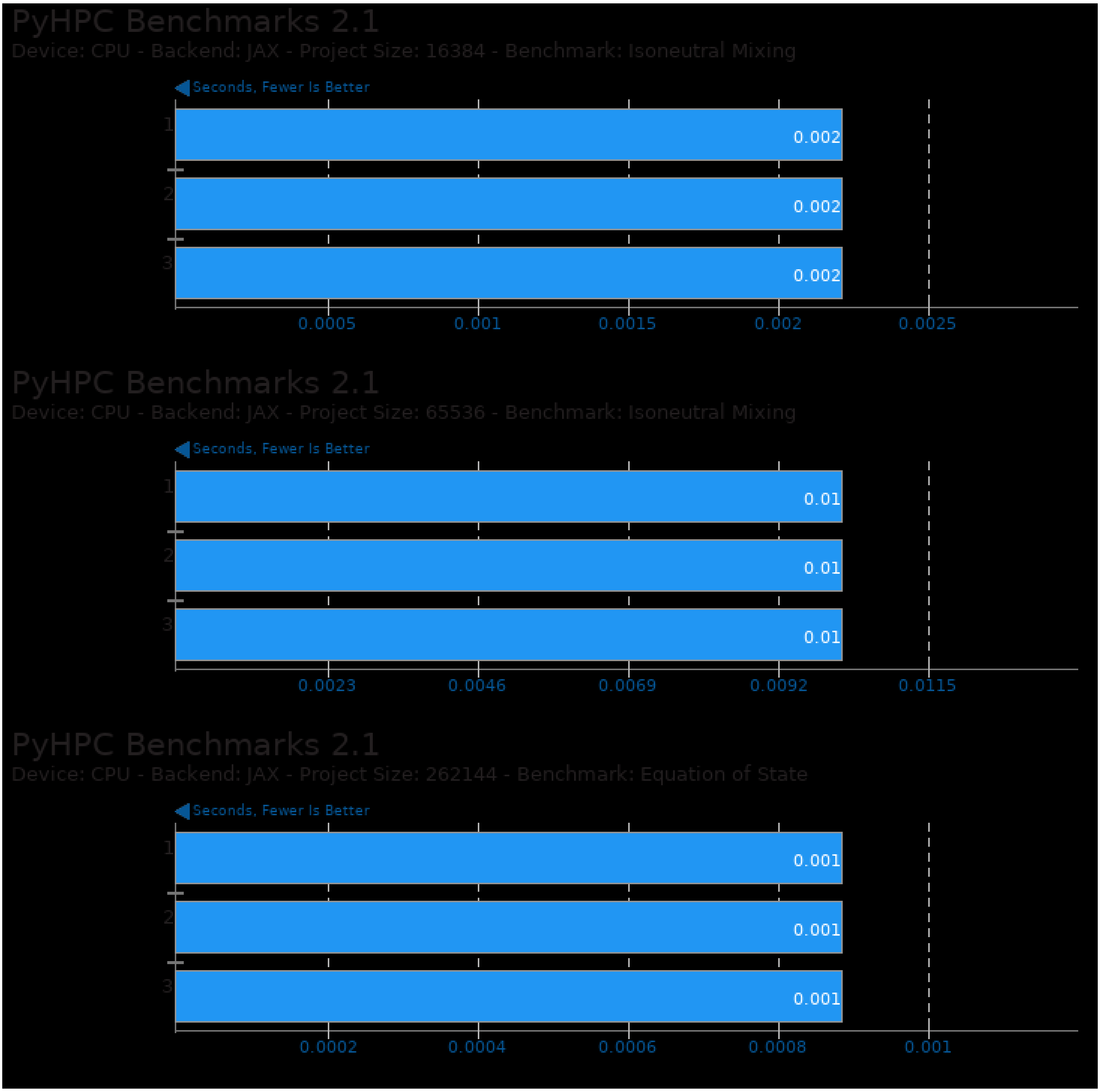
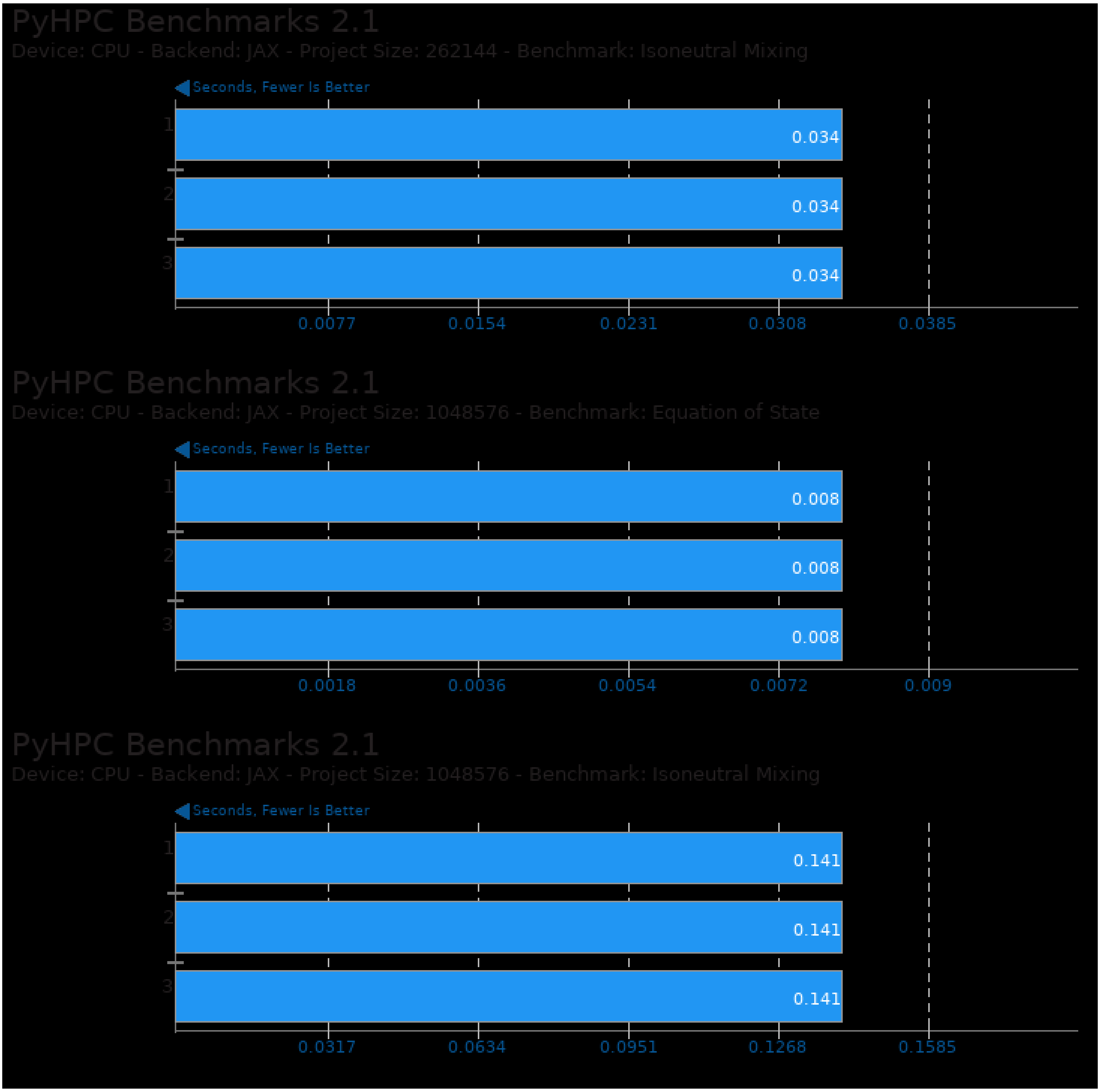
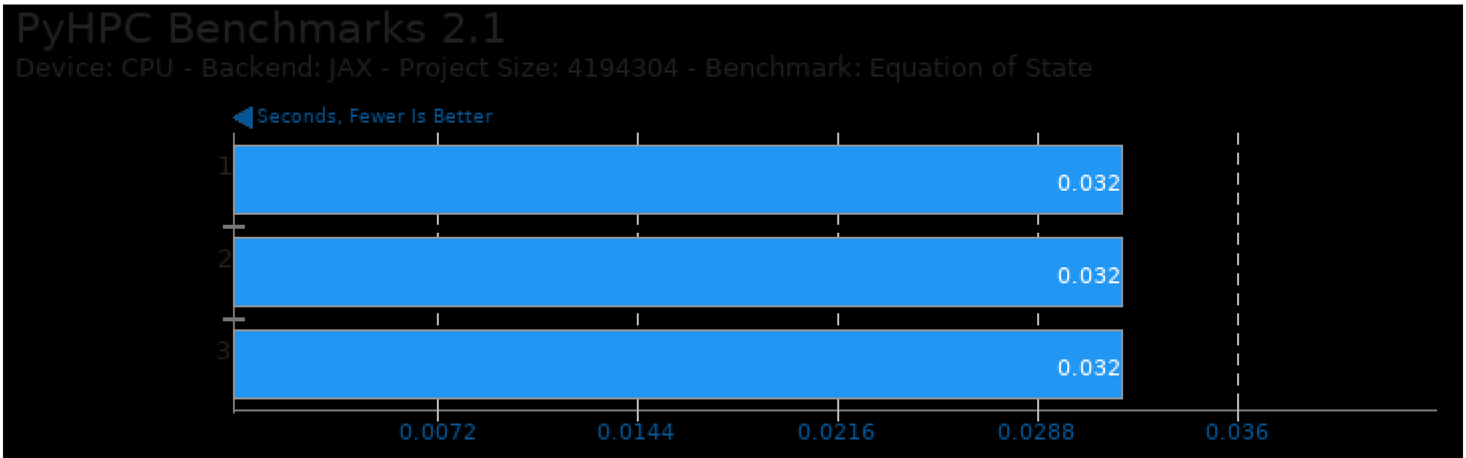
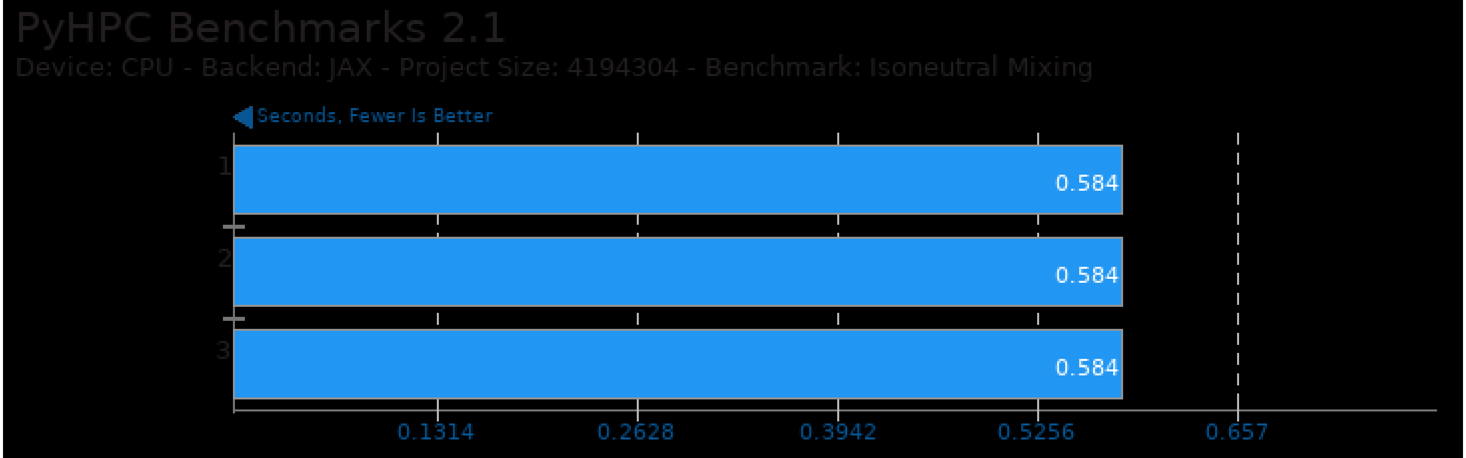
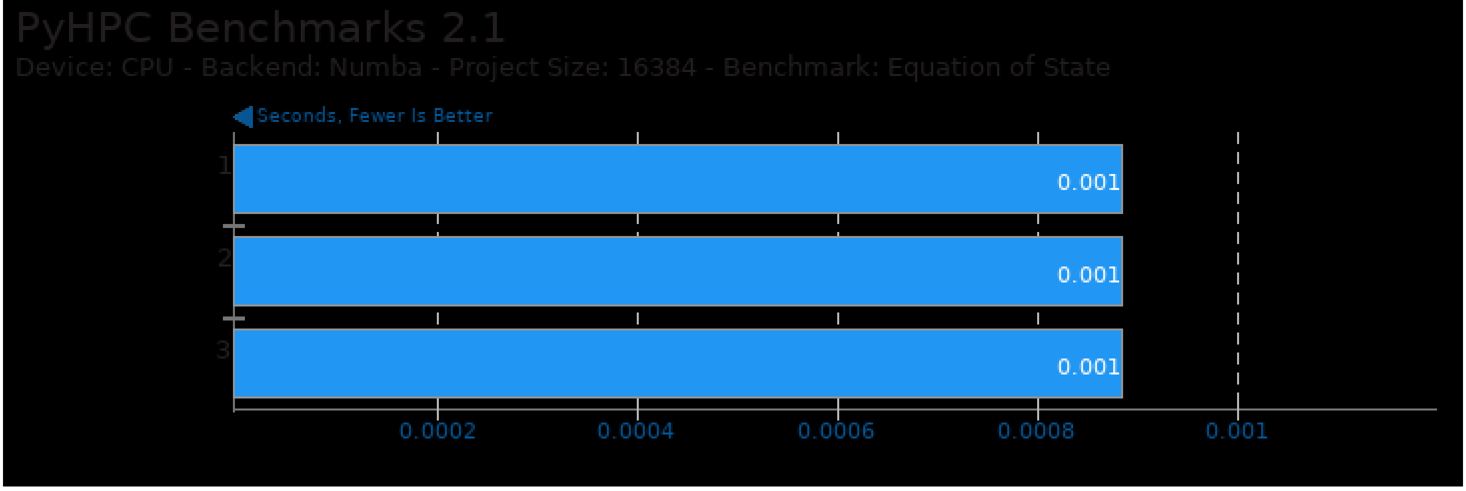


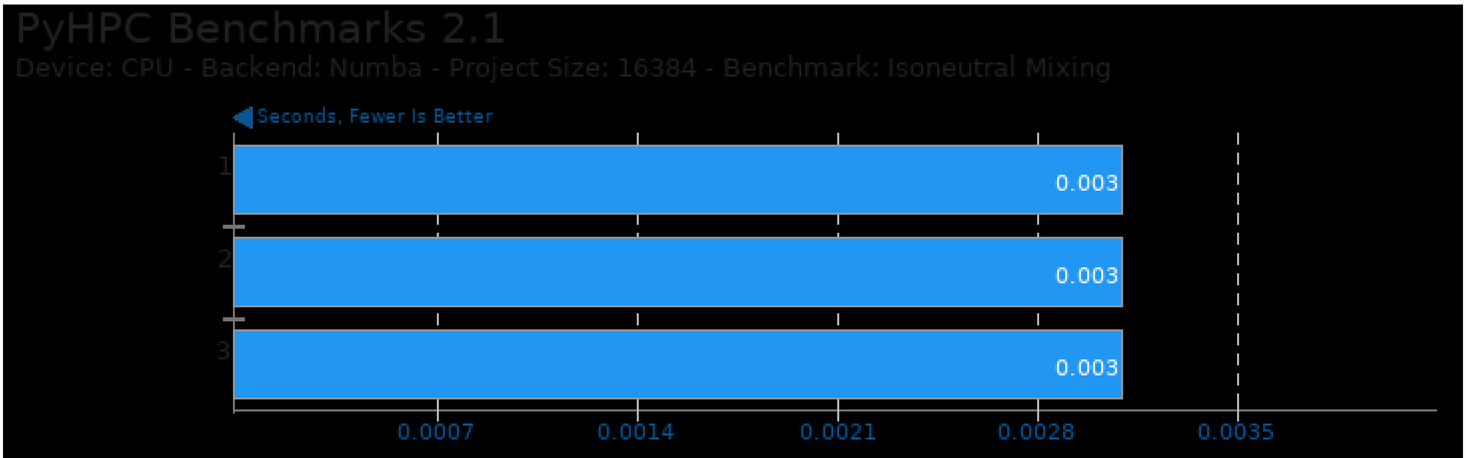


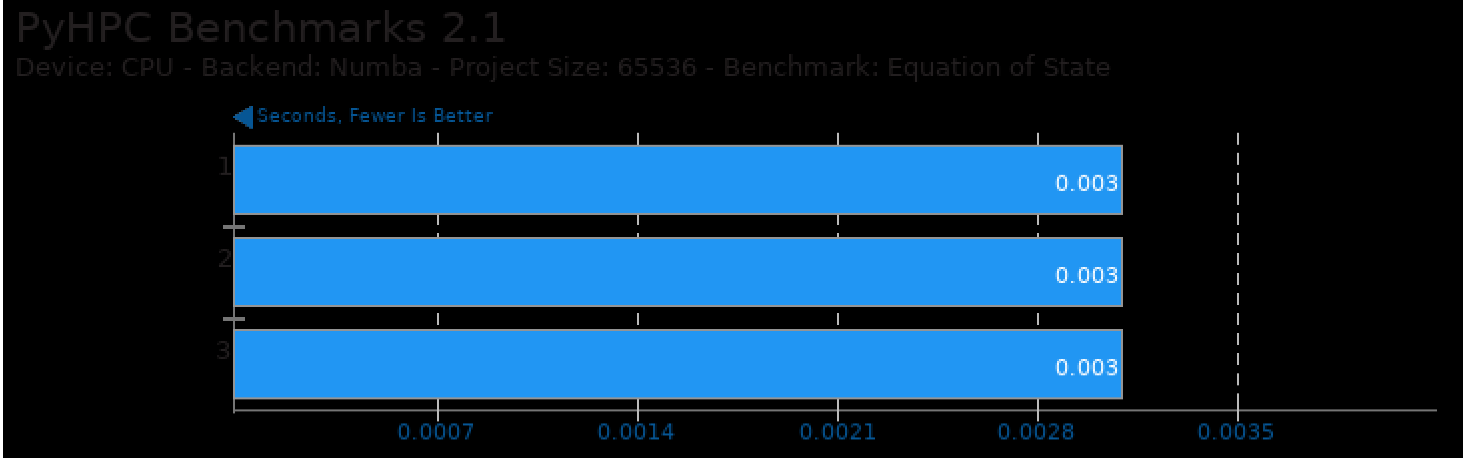
PyHPC Benchmarks 2.1
Device: CPU - Backend: JAX - Project Size: 262144 - Benchmark: Isoneutral Mixing
Seconds, Fewer Is Better
1
2
3
0.034
0.034
0.034
0.0077
0.0154
0.0231
0.0308
0.0385
PyHPC Benchmarks 2.1
Device: CPU - Backend: JAX - Project Size: 1048576 - Benchmark: Equation of State
Seconds, Fewer Is Better
1
2
3
0.008
0.008
0.008
0.0018
0.0036
0.0054
0.0072
0.009
PyHPC Benchmarks 2.1
Device: CPU - Backend: JAX - Project Size: 1048576 - Benchmark: Isoneutral Mixing
Seconds, Fewer Is Better
1
2
3
0.141
0.141
0.141
0.0317
0.0634
0.0951
0.1268
0.1585

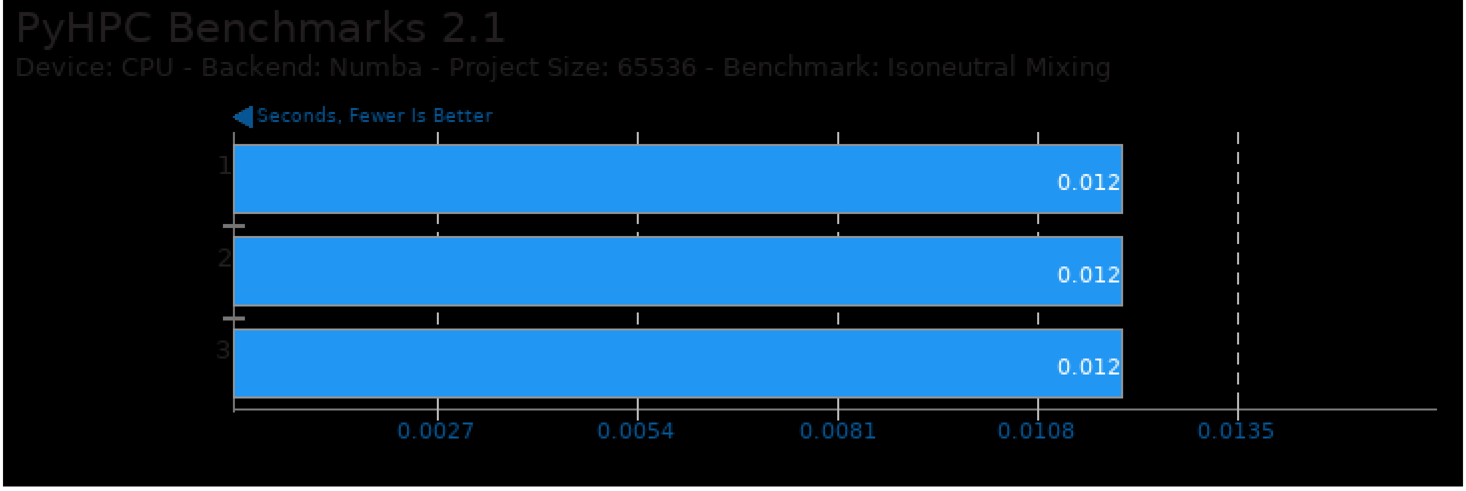

PyHPC Benchmarks 2.1
Device: CPU - Backend: JAX - Project Size: 4194304 - Benchmark: Equation of State
Seconds, Fewer Is Better
1
2
3
0.032
0.032
0.032
0.0072
0.0144
0.0216
0.0288
0.036


PyHPC Benchmarks 2.1
Device: CPU - Backend: JAX - Project Size: 4194304 - Benchmark: Isoneutral Mixing
Seconds, Fewer Is Better
1
2
3
0.584
0.584
0.584
0.1314
0.2628
0.3942
0.5256
0.657


PyHPC Benchmarks 2.1
Device: CPU - Backend: Numba - Project Size: 16384 - Benchmark: Equation of State
Seconds, Fewer Is Better
1
2
3
0.001
0.001
0.001
0.0002
0.0004
0.0006
0.0008
0.001


PyHPC Benchmarks 2.1
Device: CPU - Backend: Numba - Project Size: 16384 - Benchmark: Isoneutral Mixing
Seconds, Fewer Is Better
1
2
3
0.003
0.003
0.003
0.0007
0.0014
0.0021
0.0028
0.0035


PyHPC Benchmarks 2.1
Device: CPU - Backend: Numba - Project Size: 65536 - Benchmark: Equation of State
Seconds, Fewer Is Better
1
2
3
0.003
0.003
0.003
0.0007
0.0014
0.0021
0.0028
0.0035


PyHPC Benchmarks 2.1
Device: CPU - Backend: Numba - Project Size: 65536 - Benchmark: Isoneutral Mixing
Seconds, Fewer Is Better
1
2
3
0.012
0.012
0.012
0.0027
0.0054
0.0081
0.0108
0.0135

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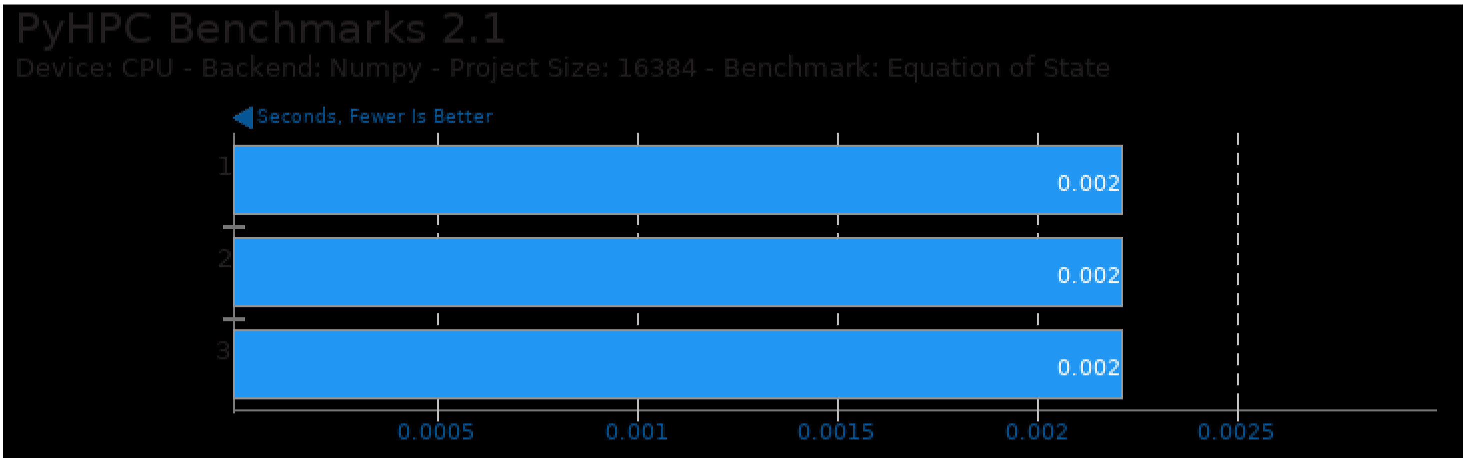

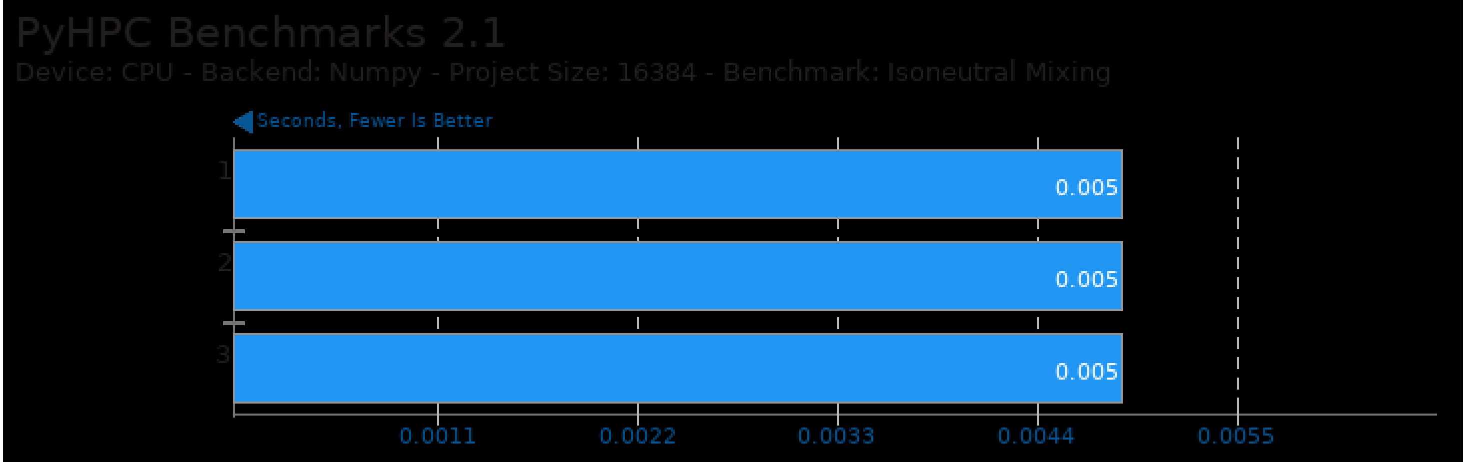

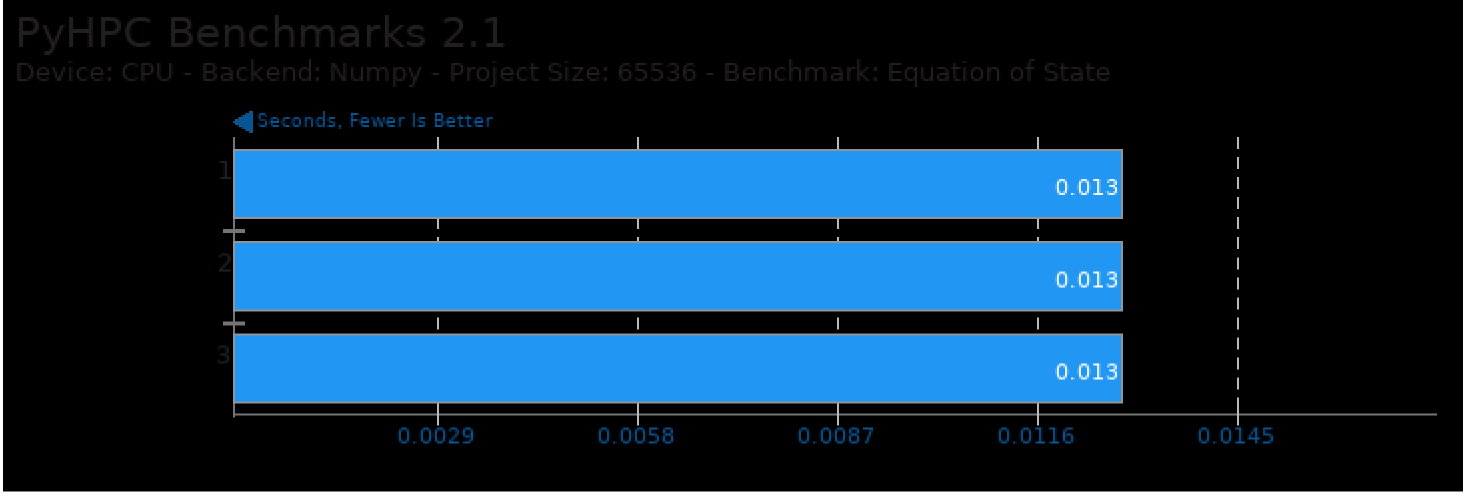

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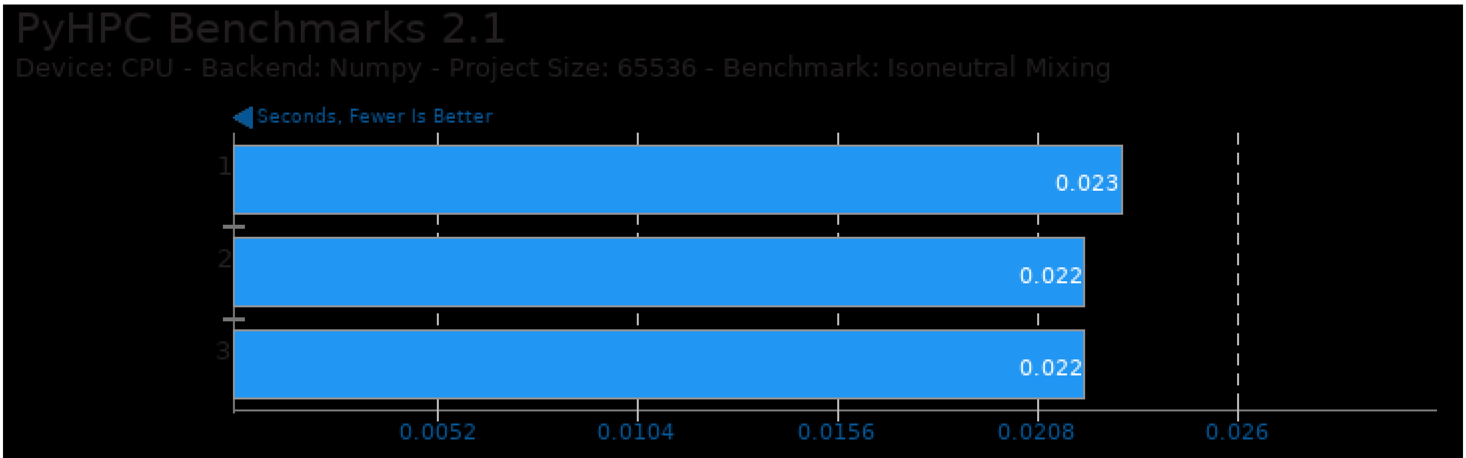
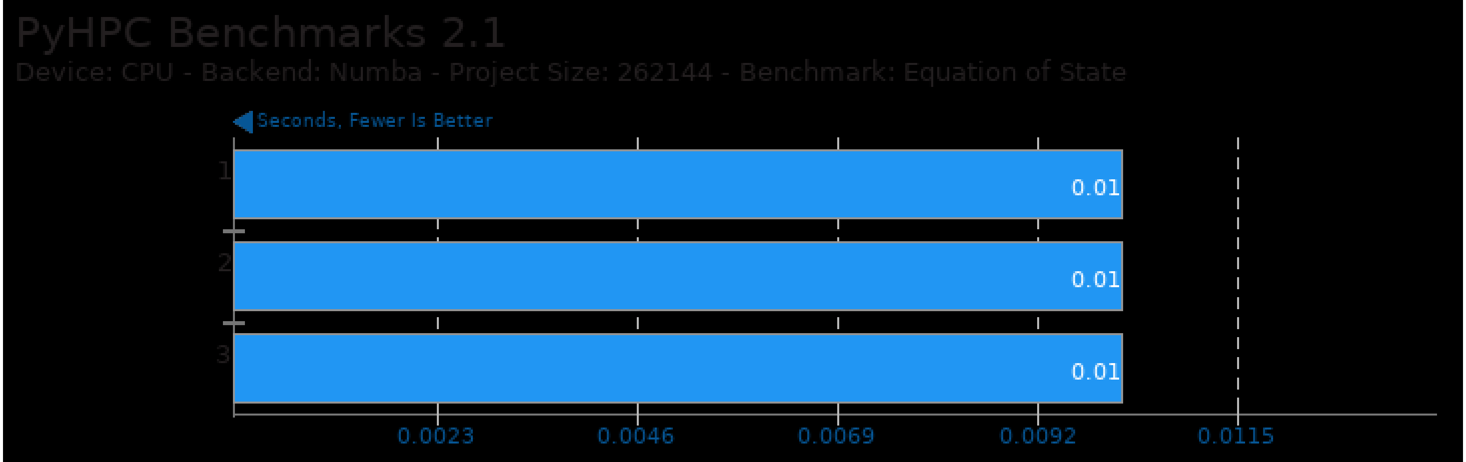
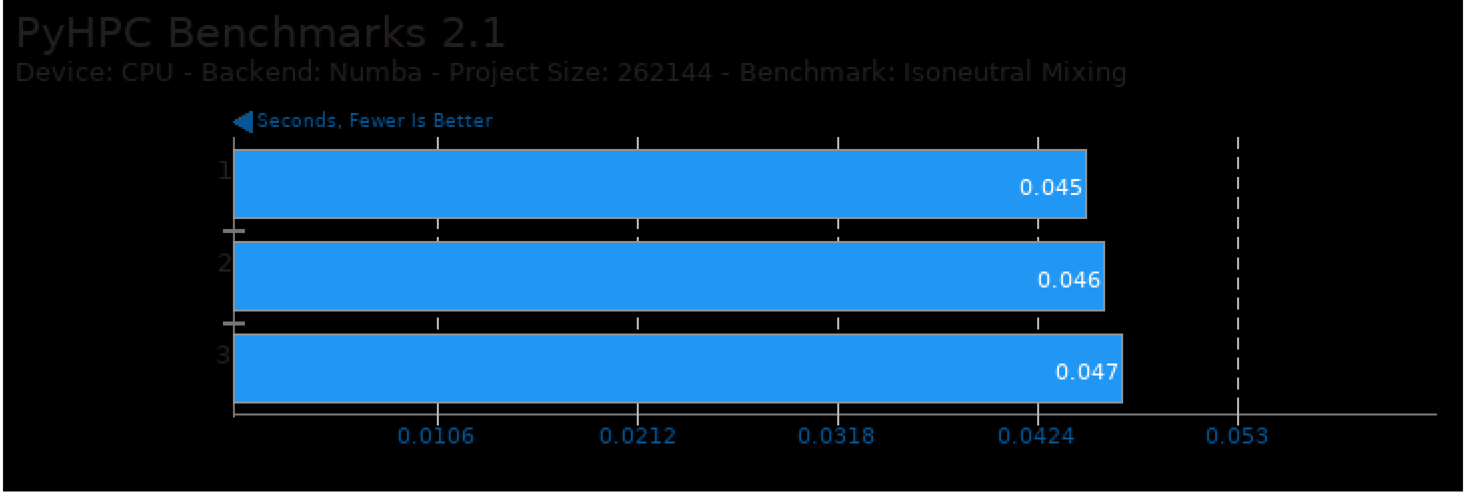
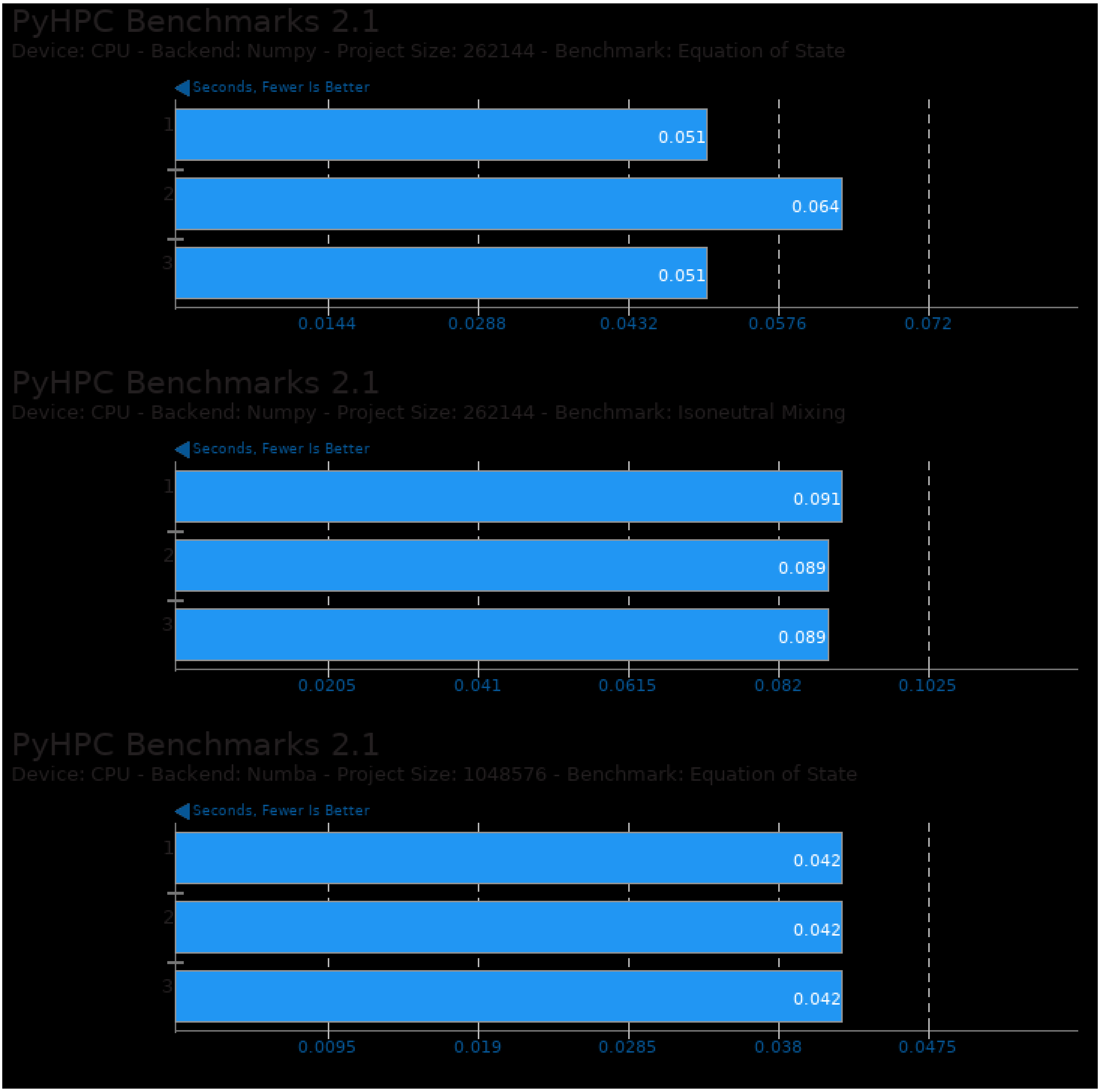
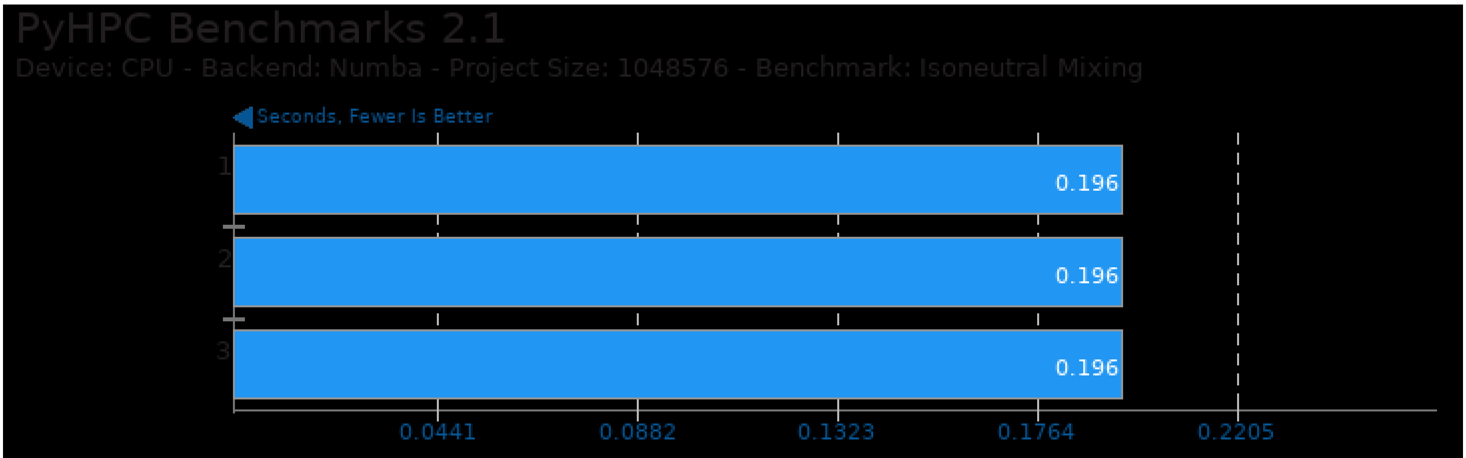
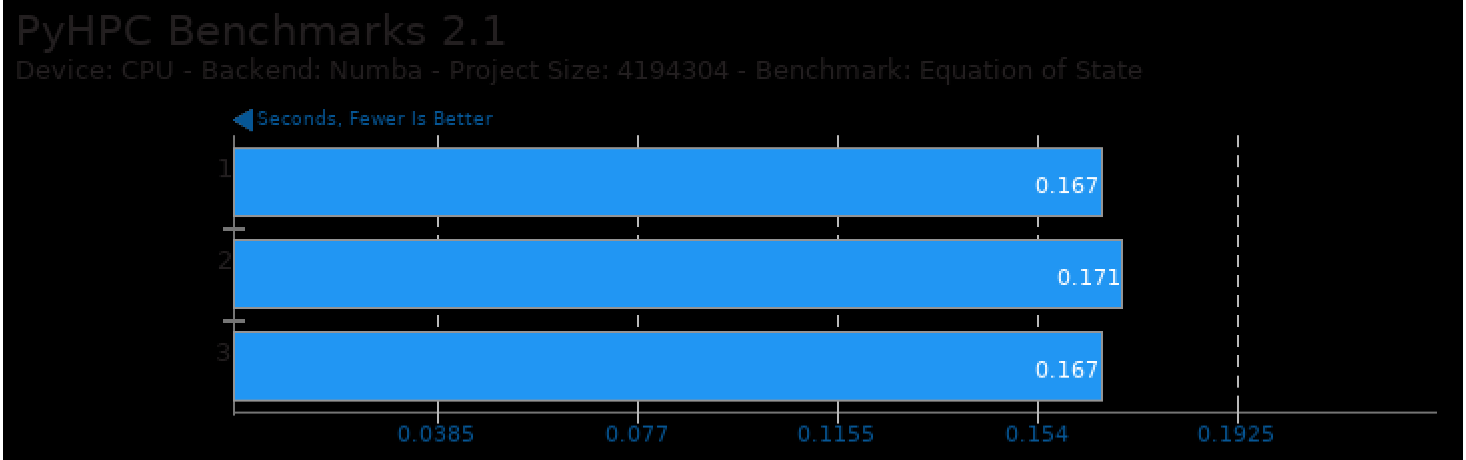


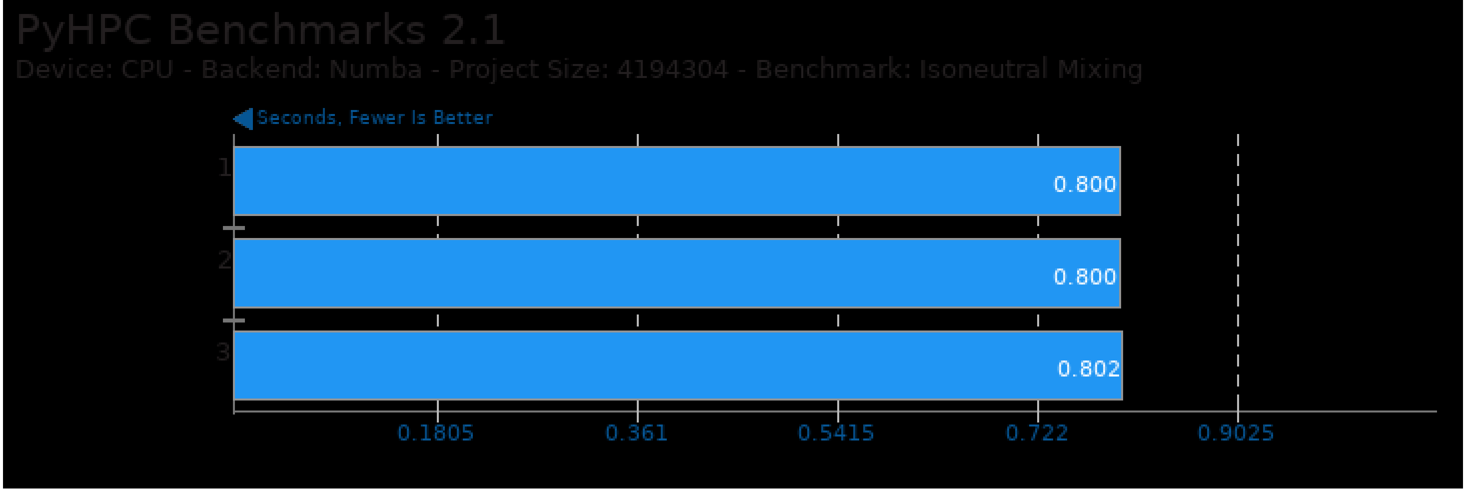





PyHPC Benchmarks 2.1
Device: CPU - Backend: Numpy - Project Size: 262144 - Benchmark: Equation of State
Seconds, Fewer Is Better
1
2
3
0.051
0.064
0.051
0.0144
0.0288
0.0432
0.0576
0.072
PyHPC Benchmarks 2.1
Device: CPU - Backend: Numpy - Project Size: 262144 - Benchmark: Isoneutral Mixing
Seconds, Fewer Is Better
1
2
3
0.091
0.089
0.089
0.0205
0.041
0.0615
0.082
0.1025
PyHPC Benchmarks 2.1
Device: CPU - Backend: Numba - Project Size: 1048576 - Benchmark: Equation of State
Seconds, Fewer Is Better
1
2
3
0.042
0.042
0.042
0.0095
0.019
0.0285
0.038
0.0475


PyHPC Benchmarks 2.1
Device: CPU - Backend: Numba - Project Size: 1048576 - Benchmark: Isoneutral Mixing
Seconds, Fewer Is Better
1
0.196
2
0.196
3
0.196
0.0441
0.0882
0.1323
0.1764
0.2205


PyHPC Benchmarks 2.1
Device: CPU - Backend: Numba - Project Size: 4194304 - Benchmark: Equation of State
Seconds, Fewer Is Better
1
0.167
2
0.171
3
0.167
0.0385
0.077
0.1155
0.154
0.1925


PyHPC Benchmarks 2.1
Device: CPU - Backend: Numba - Project Size: 4194304 - Benchmark: Isoneutral Mixing
Seconds, Fewer Is Better
1
0.800
2
0.800
3
0.802
0.1805
0.361
0.5415
0.722
0.9025

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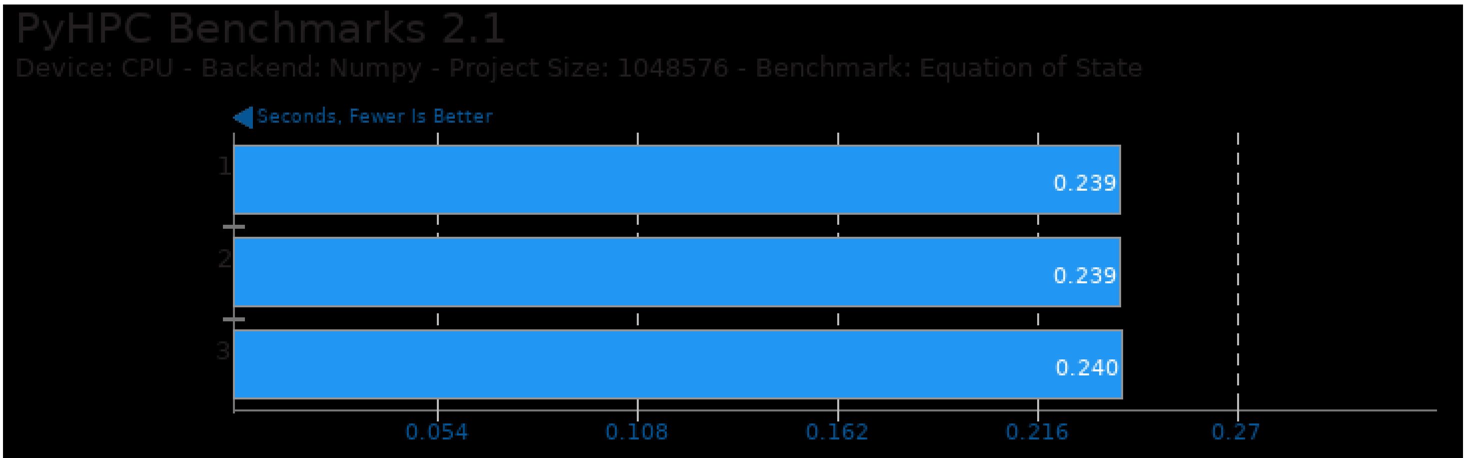

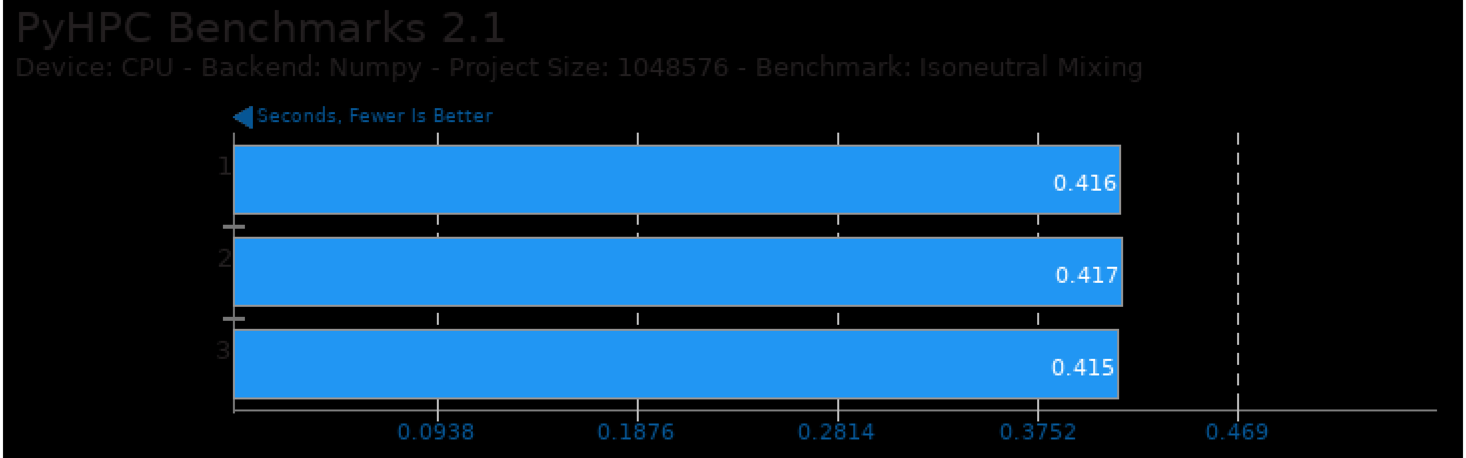

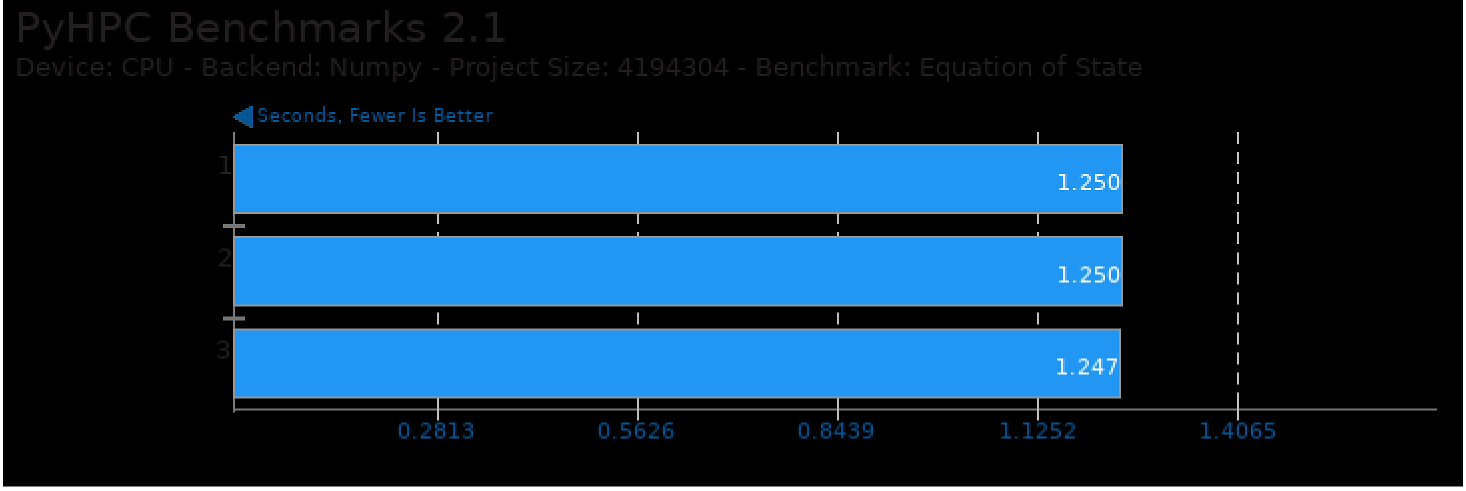

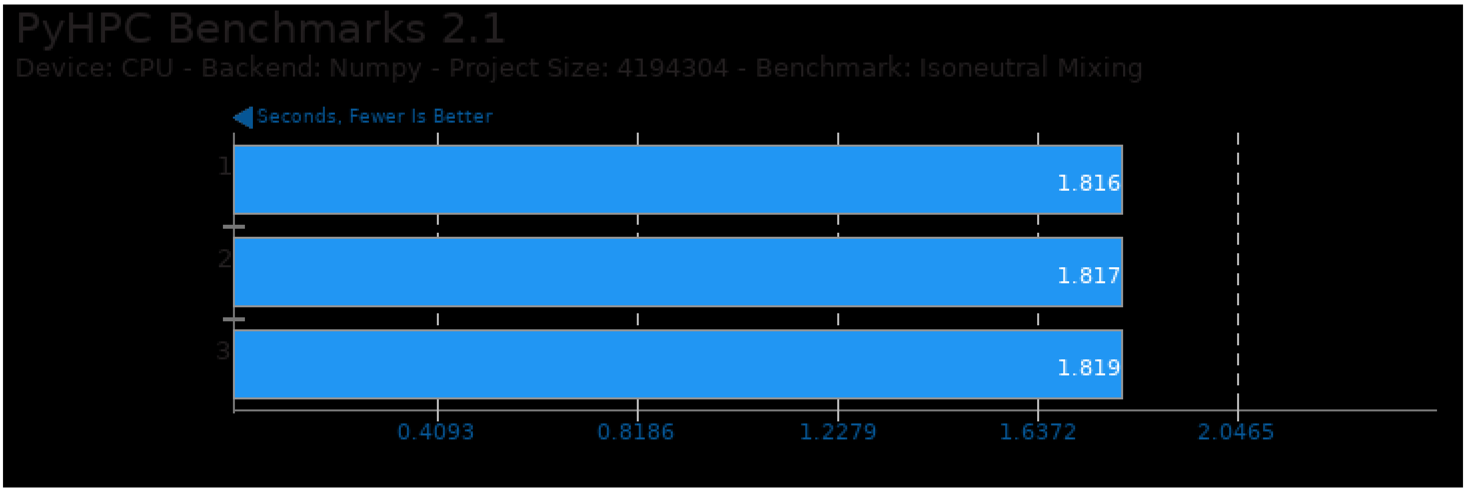

This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 11:44.