

Performance Comparison

C, C++ and Clang Compiler

on

OpenSUSE Tumbleweed Linux 2022

Hardware:

Dell PowerEdge R720 Server

CPU: 2 x Intel Xeon E5-2680-0 2.7 Ghz

RAM: 136 GByte DDR3 ECC

HDD: 26 TByte SAS

Graphics: Matrox G200, NVIDIA GeForce GT 1030,
NVIDIA Tesla M40 12 GB Ram

Compiler: gcc-7,11,12, Clang 14.0, PGI PGCC 22.7
Intel oneAPI 2022.3 icx,dpcpp,icc

COMPILER oneAPI 2022.3 ICX

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**
** SciMark4 Numeric Benchmark, see http://math.nist.gov/scimark
** for details. (Results can be submitted to pozo@nist.gov)
**
```

Using 2.00 seconds min time per kenel.

FFT	Mflops: 1024.51	(N=1024)
SOR	Mflops: 1960.72	(100 x 100)
MonteCarlo:	Mflops: 641.96	
Sparse matmult	Mflops: 1520.25	(N=1000, nz=5000)
LU	Mflops: 3490.54	(M=100, N=100)

Composite Score: 1727.59

FFT reps:	65536
SOR reps:	131072
Montel Carlo reps:	536870912
Sparse MatMult reps:	524288
LU reps:	16384

checksum: 2.1706863202096467e+05

COMPILER oneAPI DPCPP 2022.3

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**
** SciMark4 Numeric Benchmark, see http://math.nist.gov/scimark **
** for details. (Results can be submitted to pozo@nist.gov) **
**
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Using 2.00 seconds min time per kernel.

FFT	Mflops: 1056.26	(N=1024)
SOR	Mflops: 1955.49	(100 x 100)
MonteCarlo:	Mflops: 640.30	
Sparse matmult	Mflops: 1509.42	(N=1000, nz=5000)
LU	Mflops: 3583.14	(M=100, N=100)

Composite Score: 1748.92

FFT reps:	65536
SOR reps:	131072
Montel Carlo repss:	536870912
Sparse MatMult repss:	524288
LU reps:	16384

checksum: 2.1706863202096467e+05

COMPILER Clang 14.0

```
**
** SciMark4 Numeric Benchmark, see http://math.nist.gov/scimark **
** for details. (Results can be submitted to pozo@nist.gov) **
**
```

Using 2.00 seconds min time per kernel.

FFT	Mflops: 1437.30	(N=1024)
SOR	Mflops: 1838.97	(100 x 100)
MonteCarlo:	Mflops: 774.17	
Sparse matmult	Mflops: 1648.20	(N=1000, nz=5000)
LU	Mflops: 3630.46	(M=100, N=100)

Composite Score: 1865.82

FFT reps:	65536
SOR reps:	65536
Montel Carlo reps:	536870912
Sparse MatMult repps:	524288
LU reps:	16384

checksum: 2.1706863202096475e+05

COMPILER GCC 7.5

```
**
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** for details. (Results can be submitted to pozo@nist.gov) **
**
```

Using 2.00 seconds min time per kernel.

FFT	Mflops: 1647.92	(N=1024)
SOR	Mflops: 1854.83	(100 x 100)
MonteCarlo:	Mflops: 797.35	
Sparse matmult	Mflops: 1857.77	(N=1000, nz=5000)
LU	Mflops: 4791.85	(M=100, N=100)

Composite Score: 2189.94

FFT reps:	65536
SOR reps:	65536
Monte Carlo reps:	536870912
Sparse MatMult repss:	524288
LU reps:	16384

checksum: 2.1706863202096472e+05

Summary of this Tests, the OneAPI 2022.3 Compilers extrem slow.
Look at the Results from GCC 7.5.

Whats the Reason ?