

# GPU Benchmarks

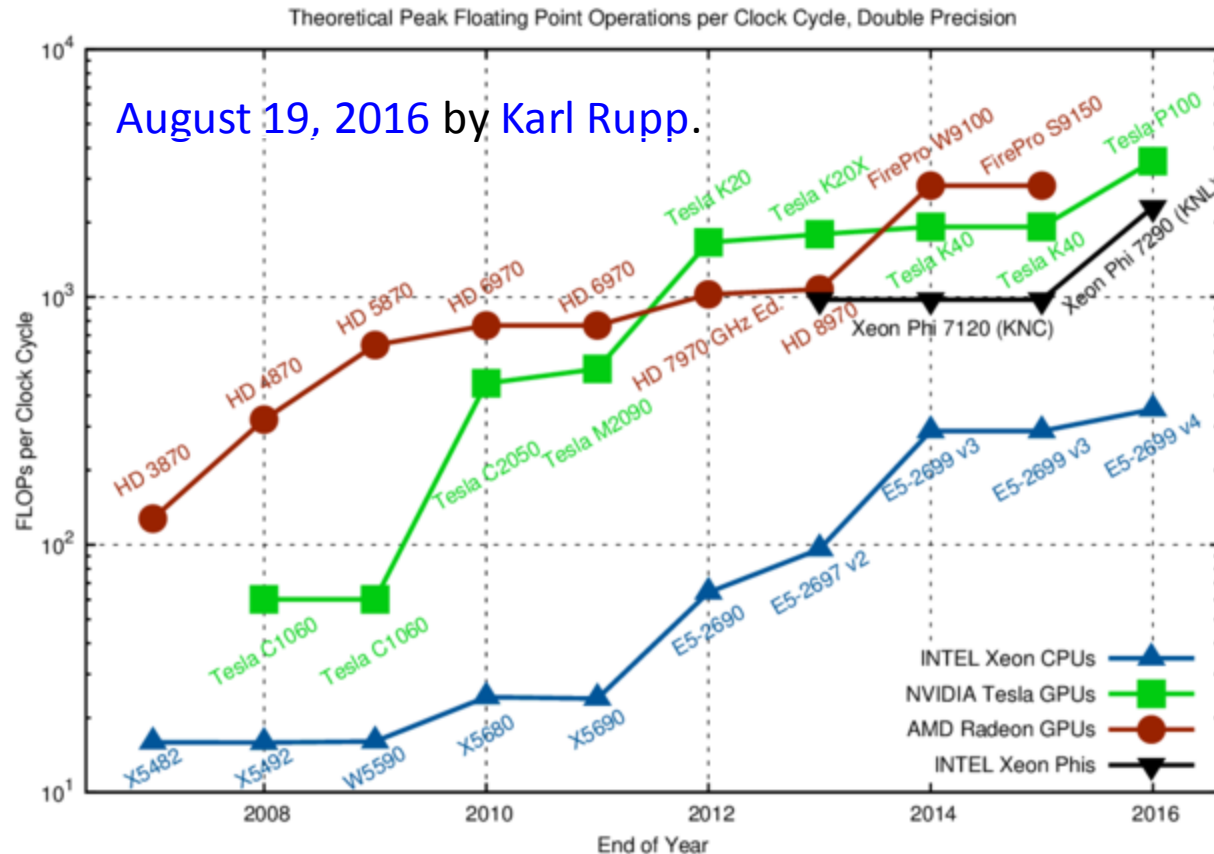
# Benchmark

- LHC: 8k drifts, 4.6k >11th multipoles, 20000 particles, 10 turns

	Cores	Clock [MHz]	Cost [\$]	GFlops FP64	Year	Bench [us/part/turn]
i7 920	1	2670	260/4	5.2	2009	545
Xeon E5-2630	1	2200	660/10	17	2016	364
2x Xeon E5-2630	2x10	2200	2x660	2x340	2016	16
GTX 1080	2560	1700	600	288	2016	12.8
K20x	2688	732	3000	1312	2015	10.8
R9 280x	2048	1000	300(150)	1.024	2013	4.3
W8100	2560	824	1000	2110	2014	4.0
P100-12	3584	1330	4600	4670	2016	(~2)
P100-nv	3584	1480	7000	5300	2016	1.8

GPU Bottleneck seems to be the number of registers that brings occupancy to 20%

# CPU vs GPU double precision



Processor	Clock GHz	Cost \$
E5 2699 v4	2.2	1700
Phi 7290	1.5	6294
Phi 7120	1.2	1500
P100	1.3-1.5	4600-7000
W9100	0.9	3200
S9150	0.9	3300

<https://www.karlrupp.net/2016/08/flops-per-cycle-for-cpus-gpus-and-xeon-phis/>