Basic Blocks vs Graph Vertices

	E4	E8	E16	E32
5	1453478	1822866	1648095	1643648
6	2085916	1720139	2057172	1452876
7	1425875	1528388	1529967	1771428
8	1614722	1525257	1693524	1987946
9	1819393	1904806	1994228	3681147
10	2382733	3385030	2905532	3836738
11	3897566	3348655	4578467	7522008
12	4328181	5045212	8156919	13908330
13	6676390	10059026	16499294	27368204
14	12030904	18924239	28589934	57631217
15	22844325	37489336	65067688	118857759
16	35151437	63950597	132930737	249193620
17	70378219	151915538	275931642	519716702
18	172766792	308711760	497196012	1071228308
19	338079457	529794274	1133409584	2174023167
20	567446775	1070927173	2071459383	4405415762
21	1369864776	2169051139	4214223110	8253939031
22	2821045902	4400199429	9691692520	16846059689

Basic Block vs Vertices
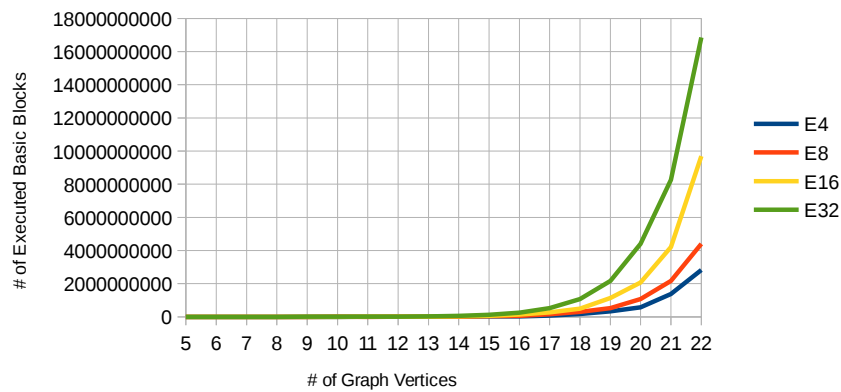
Read Memory Instructions vs Graph Vertices

	E4	E8	E16	E32
5	1203609	1316416	1075580	1039871
6	1087009	1248968	1557358	1181456
7	1201903	1156895	1534838	1560380
8	1519438	1563027	1560425	1869724
9	1847183	2197727	2569924	3130128
10	2102366	2726635	3905613	5735456
11	3376251	4646566	7145701	11904472
12	5347643	6581729	14710196	25523265
13	10221188	16687034	28817282	49640991
14	20452777	34909677	44433652	109135090
15	41990141	66926568	120261110	222193023
16	55430168	101054495	247297374	466208364
17	112323962	290628363	523372230	998088547
18	334425808	595614670	805334316	2048967180
19	641999225	855860519	2109042773	4069158673
20	918922166	1736539001	3371038531	8124372774
21	2608646736	3523689498	6867409209	13518019809
22	5499620373	7161854845	18385511680	27630009899

Read Memory Ins

Read Memory Instruction Count

30000000000

25000000000

20000000000

15000000000

10000000000

5000000000

0

5 6 7 8 9 10

\# of Gr
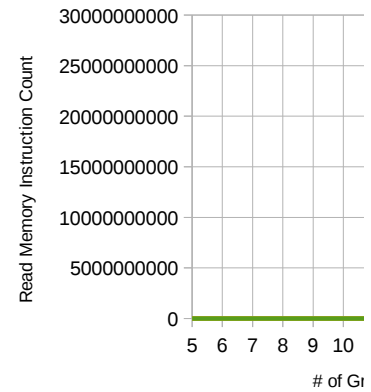
Write Memory Instructions vs Graph Vertices

	E4	E8	E16	E32
5	245208	249607	252290	255321
6	256504	264162	279349	293656
7	283083	304501	330005	371880
8	334871	385278	464706	569182
9	442821	553545	723298	988542
10	673307	899690	1310989	1940534
11	1119940	1644582	2502741	3998459
12	2024261	2838760	5056193	8364308
13	3959276	6245376	10324173	17478674
14	7812822	12609678	19916165	36737135
15	15874781	25380429	43401208	76499737
16	25940439	46040706	88875499	159175077
17	52042486	103709639	181781843	328552613
18	125907522	210613666	350073705	673607709
19	247762866	381557491	745955888	1374882956
20	420694623	768552208	1440444678	2793838821
21	993545496	1545581705	2910312410	5538756894
22	2004577266	3112970793	6223634793	11219361530

Write Memory In

Write Memory Instruction Count

12000000000

10000000000

8000000000

6000000000

4000000000

2000000000

0

5 6 7 8 9 10

\# of G
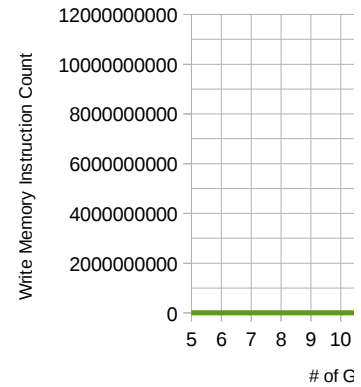
Total Instructions vs Graph Vertices

	E4	E8	E16	E32
5	5767663	7059932	6478609	6455193
6	8013009	6747921	7965604	5884764
7	5762164	6197914	6257824	7221068
8	6569946	6409362	7209799	8533695
9	7591215	8179402	8969055	15752010
10	10157014	14310679	13871412	19008135
11	16773712	16367100	23036916	38444403
12	20689983	24516225	43173726	75055219
13	34201354	52891429	88167985	147966461
14	64204374	103362244	148335071	316275480
15	125118155	203330045	355643742	649812409
16	185708159	335533980	728135707	1361617993
17	372563491	842585791	1519768507	2863127715

Total Instruc

Total Instruction Count

100000000000

90000000000

80000000000

70000000000

60000000000

50000000000

40000000000

30000000000

20000000000

10000000000
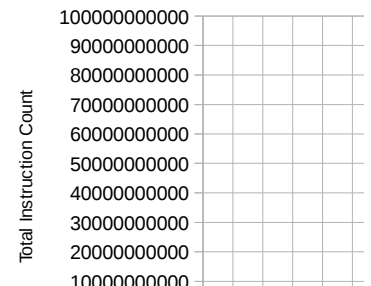
18	965990061	1716353272	2607625447	5888171332
19	1877164099	2792362007	6194198197	11853840653
20	3011858994	5642658747	10857905791	23885526907
21	7598784662	11423244427	22070902130	43084274703
22	15746575154	23153441785	53155613257	87874795437
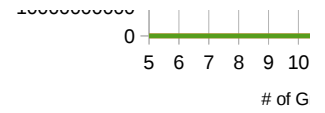
10000000000

0

5 6 7 8 9 10

# of G

structions vs Graph Vertices

11 12 13 14 15 16 17 18 19 20 21 22
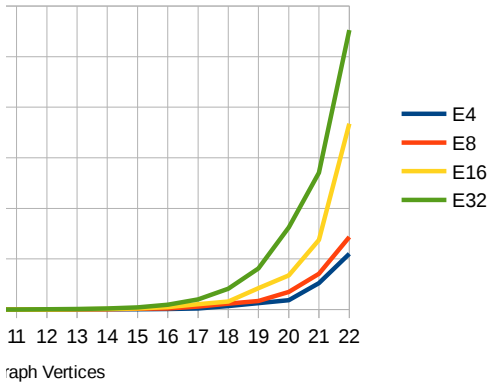
raph Vertices

Read Memory Instruction Percentages vs Graph Vertices

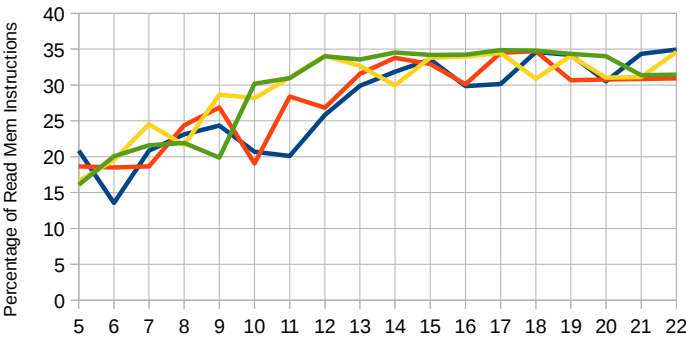|	E4	E8	E16	E32
5	20.86822687	18.64629858	16.60202059	16.10906134
6	13.56555321	18.50893038	19.55103467	20.07652303
7	20.85853509	18.66587694	24.52670449	21.60871494
8	23.12710028	24.38662382	21.64311377	21.90989952
9	24.33316669	26.8690425	28.65323047	19.87129262
10	20.69866203	19.05314905	28.15584311	30.17369142
11	20.12822803	28.38967196	31.01847921	30.96542298
12	25.84653163	26.84642109	34.07210209	34.00598298
13	29.88533144	31.54959946	32.68451922	33.54881279
14	31.85573774	33.77410905	29.9549201	34.50633922
15	33.56039018	32.91523788	33.81505023	34.19341027
16	29.84799822	30.11751448	33.96308842	34.23929225
17	30.148945	34.4924358	34.43762834	34.86007773
18	34.62000506	34.70233545	30.88381872	34.79802242
19	34.20048494	30.650056	34.04868081	34.32776593
20	30.51013237	30.7751909	31.04685743	34.01378921
21	34.32978893	30.84666113	31.11521753	31.37576274
22	34.92581923	30.93213921	34.58809061	31.44247422

structions vs Graph Vertices

11 12 13 14 15 16 17 18 19 20 21 22
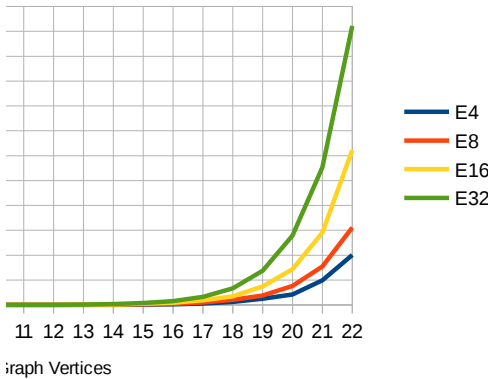
Graph Vertices

Write Memory Instruction Percentages vs Graph Vertices

	E4	E8	E16	E32
5	4.251427311	3.535543968	3.894200128	3.955280655
6	3.20109462	3.914716844	3.506940591	4.990106655
7	4.912789709	4.912959425	5.273478449	5.14993073
8	5.097012974	6.011175527	6.445477884	6.669818877
9	5.83333498	6.767548532	8.064372445	6.27565625
10	6.628985645	6.286843552	9.45101335	10.20896579
11	6.676757059	10.04809649	10.86404534	10.40062711
12	9.783773143	11.57910731	11.71127319	11.14420571
13	11.57637209	11.80791693	11.70966196	11.81259177
14	12.16867561	12.19950101	13.4264708	11.61554952
15	12.68783175	12.48238006	12.20356297	11.77258789
16	13.96838951	13.72162247	12.20589763	11.69014201
17	13.96875627	12.30849607	11.96115344	11.47530413
18	13.03403907	12.27099744	13.42499957	11.44001543
19	13.19878566	13.66432755	12.04281594	11.59862863
20	13.96793887	13.62039142	13.26632139	11.69678539
21	13.07505792	13.53014649	13.18619598	12.85563453
22	12.7302429	13.44495916	11.70833034	12.76743971

tions vs Graph Vertices

Read Memory Instruction Percentages vs Graph Vertice

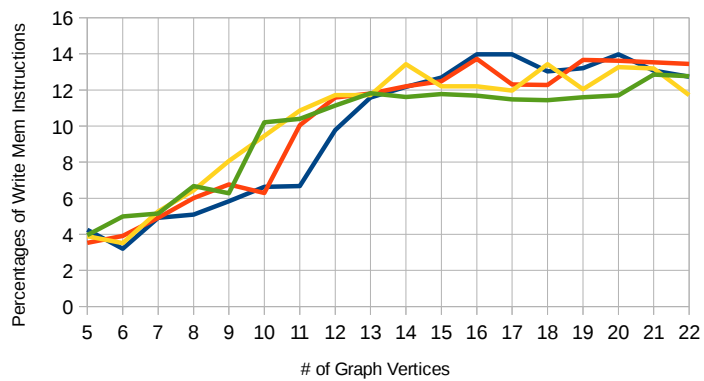11 12 13 14 15 16 17 18 19 20 21 22

raph Vertices

# of Graph Vertices

Write Memory Instruction Percentages vs Graph Vertices
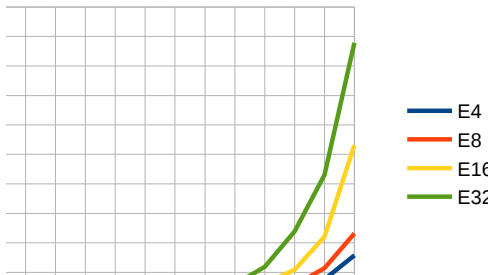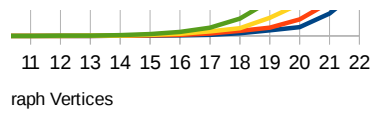
Percentages of Write Mem Instructions

# of Graph Vertices

S

——— E4
——— E8
——— E16
——— E32

S

—— E4
—— E8
—— E16
—— E32

Memory Read Size vs Graph Vertices

	E4	E8	E16	E32
5	5283461	5741915	4802576	4657585
6	4866260	5543226	6847120	5402097
7	5459428	5377663	6946803	7244118
8	6942626	7366911	7725168	9449740
9	8745953	10628789	12911209	16515087
10	10718619	14285218	20983390	31271716
11	17930036	25542261	39156328	66589654
12	29739962	35835004	81561222	144486904
13	57696425	94434988	163224456	279611403
14	117177658	199046956	244878572	616707841
15	240820145	380801496	679561900	1249142195
16	313425325	562850446	1395468027	2613095070
17	633319247	1657679876	2957289708	5601634515
18	1916189089	3389795617	4398343304	11466882070
19	3662958350	4729241275	11799769627	22585817520
20	5158367636	9574035473	18310579469	44838562980
21	14829919086	19377296544	37219900415	72377138515
22	31341144488	39255470114	1.0248E+011	1.4763E+011
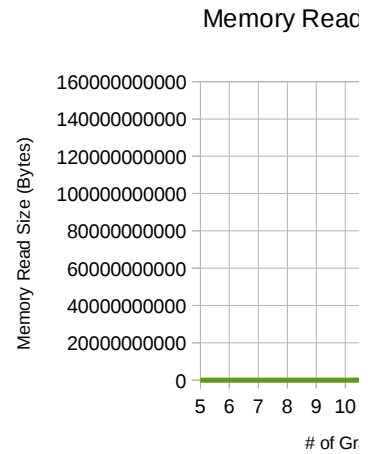
Memory Write Size vs Graph Vertices

	E4	E8	E16	E32
5	1450131	1475402	1490683	1509266
6	1514706	1562264	1654120	1739319
7	1670146	1797085	1952932	2202834
8	1971856	2272683	2748773	3379548
9	2597711	3256864	4283200	5870738
10	3926076	5307262	7756494	11533338
11	6523400	9658323	14825209	23742689
12	11782415	16990740	29899813	49664737
13	22909082	36641730	61102936	103836850
14	45196071	73920623	119227860	218307886
15	91362255	148676561	256967391	454771764
16	155558866	275916522	525909283	945461238
17	312179552	608684448	1076218041	1951148259
18	726856959	1234345963	2095041982	4003955323
19	1435017134	2284356395	4421230597	8176838993
20	2524667456	4602016837	8613505944	16620318486
21	5758028537	9258135516	17408000578	33088227136
22	11611545571	18637041050	36790840117	67056549646

Size

l Size vs Graph Vertices

E4
E8
E16
E32

11 12 13 14 15 16 17 18 19 20 21 22
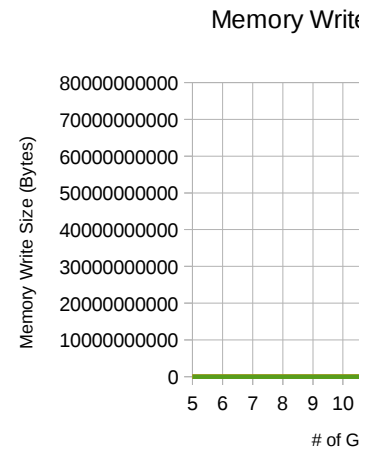
aph Vertices

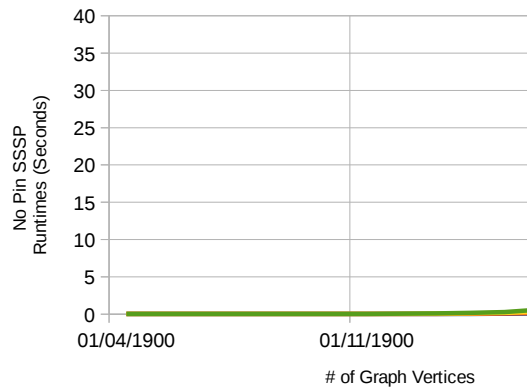## e Size vs Graph Vertices

E4
E8
E16
E32

11 12 13 14 15 16 17 18 19 20 21 22
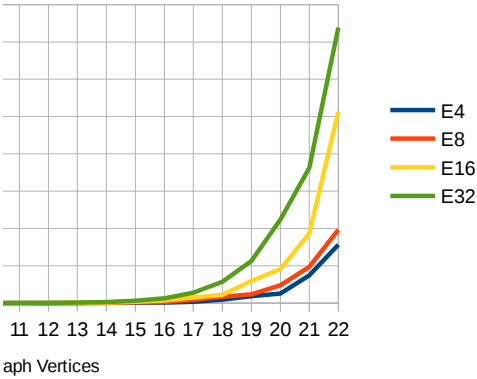
raph Vertices
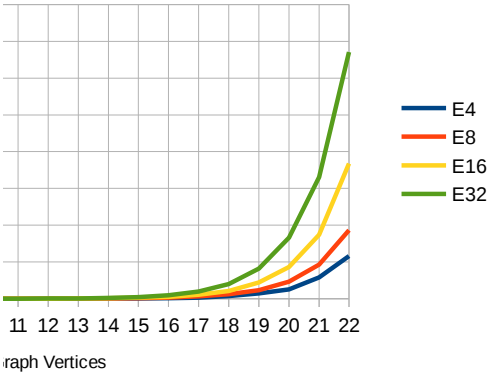
05_4_1	0	0.033	05_8_1	0	0.023	05_16_1	0	0.023
06_4_1	0	0.032	06_8_1	0	0.032	06_16_1	0	0.032
07_4_1	0	0.032	07_8_1	0	0.032	07_16_1	0	0.032
08_4_1	0	0.023	08_8_1	0	0.023	08_16_1	0	0.023
09_4_1	0	0.023	09_8_1	0	0.023	09_16_1	0	0.023
10_4_1	0	0.025	10_8_1	0	0.034	10_16_1	0	0.034
11_4_1	0	0.025	11_8_1	0	0.034	11_16_1	0	0.034
12_4_1	0	0.034	12_8_1	0	0.025	12_16_1	0	0.025
13_4_1	0	0.025	13_8_1	0	0.034	13_16_1	0	0.042
14_4_1	0	0.042	14_8_1	0	0.05	14_16_1	0	0.059
15_4_1	0	0.059	15_8_1	0	0.075	15_16_1	0	0.1
16_4_1	0	0.067	16_8_1	0	0.084	16_16_1	0	0.159
17_4_1	0	0.092	17_8_1	0	0.192	17_16_1	0	0.325
18_4_1	0	0.233	18_8_1	0	0.375	18_16_1	0	0.558
19_4_1	0	0.45	19_8_1	0	0.608	19_16_1	0	1.367
20_4_1	0	0.683	20_8_1	0	1.234	20_16_1	0	2.266
21_4_1	0	2.025	21_8_1	0	2.615	21_16_1	0	5.399
22_4_1	0	5.354	22_8_1	0	5.815	22_16_1	0	15.302

No Pin SSSP Runtimes vs Graph Vertices

	E4	E8	E16	E32	
5	0.033	0.023	0.023	0.032	
6	0.032	0.032	0.032	0.023	
7	0.032	0.032	0.032	0.032	
8	0.023	0.023	0.023	0.023	
9	0.023	0.023	0.023	0.023	
10	0.025	0.034	0.034	0.034	
11	0.025	0.034	0.034	0.034	
12	0.034	0.025	0.025	0.042	
13	0.025	0.034	0.042	0.059	
14	0.042	0.05	0.059	0.084	
15	0.059	0.075	0.1	0.15	
16	0.067	0.084	0.159	0.267	
17	0.092	0.192	0.325	0.551	
18	0.233	0.375	0.558	1.159	
19	0.45	0.608	1.367	2.391	
20	0.683	1.234	2.266	5.773	
21	2.025	2.615	5.399	11.361	
22	5.354	5.815	15.302	22.872	

No Pin SSSP Runtimes vs Gra

Y-axis: No Pin SSSP Runtimes (Seconds); scale 0, 5, 10, 15, 20, 25, 30, 35, 40

X-axis labels: 01/04/1900, 01/11/1900

X-axis title: # of Graph Vertices

05_4_1	0	0.859	0	0.765	05_8_1	0	0.859	0	0.765
06_4_1	0	0.859	0	0.798	06_8_1	0	0.842	0	0.757
07_4_1	0	0.859	0	0.765	07_8_1	0	0.875	0	0.782
08_4_1	0	0.859	0	0.798	08_8_1	0	0.85	0	0.782
09_4_1	0	0.875	0	0.765	09_8_1	0	0.867	0	0.798
10_4_1	0	0.867	0	0.796	10_8_1	0	0.884	0	0.79
11_4_1	0	0.9	0	0.815	11_8_1	0	0.884	0	0.823
12_4_1	0	0.875	0	0.765	12_8_1	0	0.9	0	0.782
13_4_1	0	0.892	0	0.773	13_8_1	0	0.934	0	0.79
14_4_1	0	0.917	0	0.832	14_8_1	0	0.992	0	0.84
15_4_1	0	0.976	0	0.873	15_8_1	0	1.084	0	0.882
16_4_1	0	1.042	0	0.898	16_8_1	0	1.167	0	1.007
17_4_1	0	1.275	0	1.023	17_8_1	0	1.708	0	1.232
18_4_1	0	1.817	0	1.339	18_8_1	0	2.508	0	1.748
19_4_1	0	2.866	0	1.865	19_8_1	0	3.466	0	2.422
20_4_1	0	3.799	0	2.572	20_8_1	0	6.214	0	4.313
21_4_1	0	9.013	0	5.568	21_8_1	0	11.97	0	7.653
22_4_1	0	18.783	0	11.659	22_8_1	0	24.532	0	15.124

Pin SSSP Runtimes vs Graph Vertices

	E4	E8	E16	E32
5	0.812	0.812	0.8285	0.8325
6	0.8285	0.7995	0.7995	0.82
7	0.812	0.8285	0.8035	0.8075
8	0.8285	0.816	0.812	0.808
9	0.82	0.8325	0.841	0.8285
10	0.8315	0.837	0.8535	0.837
11	0.8575	0.8535	0.8575	0.853
12	0.82	0.841	0.862	0.887
13	0.8325	0.862	0.919	0.945
14	0.8745	0.916	0.962	1.07
15	0.9245	0.983	1.095	1.3325
16	0.97	1.087	1.3745	1.824
17	1.149	1.47	1.9655	2.923
18	1.578	2.128	2.7485	5.175
19	2.3655	2.944	5.547	9.8855
20	3.1855	5.2635	9.1035	18.9225
21	7.2905	9.8115	18.348	34.2035
22	15.221	19.828	46.1425	71.579
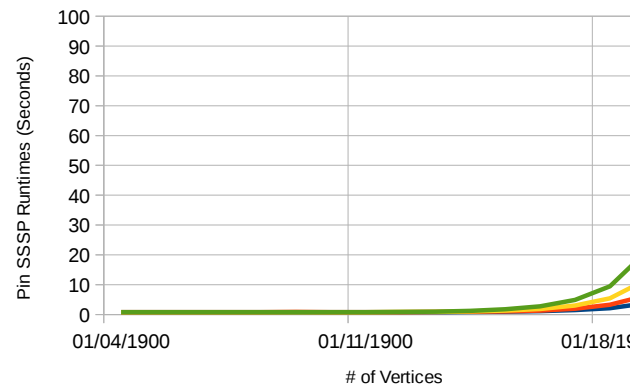
Pin SSSP Runtimes vs Graph Vertice

05_32_1	0	0.032
06_32_1	0	0.023
07_32_1	0	0.032
08_32_1	0	0.023
09_32_1	0	0.023
10_32_1	0	0.034
11_32_1	0	0.034
12_32_1	0	0.042
13_32_1	0	0.059
14_32_1	0	0.084
15_32_1	0	0.15
16_32_1	0	0.267
17_32_1	0	0.551
18_32_1	0	1.159
19_32_1	0	2.391
20_32_1	0	5.773
21_32_1	0	11.361
22_32_1	0	22.872

aph Vertices

E4
E8
E16
E32

01/18/1900
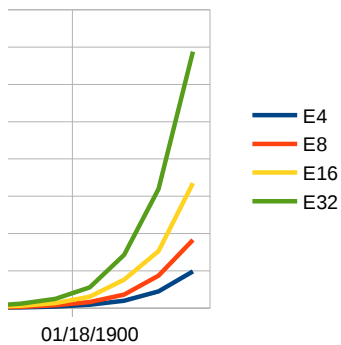
05_16_1	0	0.859	0	0.798 05_32_1	0	0.867	0	0.798
06_16_1	0	0.834	0	0.765 06_32_1	0	0.867	0	0.773
07_16_1	0	0.85	0	0.757 07_32_1	0	0.842	0	0.773
08_16_1	0	0.867	0	0.757 08_32_1	0	0.859	0	0.757
09_16_1	0	0.892	0	0.79 09_32_1	0	0.867	0	0.79
10_16_1	0	0.892	0	0.815 10_32_1	0	0.867	0	0.807
11_16_1	0	0.9	0	0.815 11_32_1	0	0.9	0	0.806
12_16_1	0	0.909	0	0.815 12_32_1	0	0.934	0	0.84
13_16_1	0	0.984	0	0.854 13_32_1	0	1.017	0	0.873
14_16_1	0	1.042	0	0.882 14_32_1	0	1.175	0	0.965
15_16_1	0	1.192	0	0.998 15_32_1	0	1.492	0	1.173
16_16_1	0	1.542	0	1.207 16_32_1	0	2.125	0	1.523
17_16_1	0	2.308	0	1.623 17_32_1	0	3.499	0	2.347
18_16_1	0	3.266	0	2.231 18_32_1	0	6.239	0	4.111
19_16_1	0	6.756	0	4.338 19_32_1	0	12.386	0	7.385
20_16_1	0	10.854	0	7.353 20_32_1	0	23.031	0	14.814
21_16_1	0	22.315	0	14.381 21_32_1	0	40.581	0	27.826
22_16_1	0	56.714	0	35.571 22_32_1	1	26.275	0	56.883

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