Table 1: Experimental results on graphs from network repository

| Graphs | ReConSLS Wmax/Wavg (time) | CERS Wmax/Wavg (time) | LSMR Wmax/Wavg (time) | LSCC Wmax/Wavg (time) | LSCC+BMS Wmax/Wavg (time) |
|---|---|---|---|---|---|
| bio/bio-celegans 453,2K | 4196 (**0**) | 4196 (0.289) | 4196 (**0**) | 4196 (0.038) | 4196 (0.021) |
| bio/bio-diseasome 516,1K | 5055 (**0**) | 5055 (0.28) | 5055 (**0**) | 5055 (**0**) | 5055 (**0**) |
| bio/bio-dmela 7K,26K | 1919 (0.037) | 1919 (0.288) | 1919 (0.039) | 1919 (**0**) | 1919 (0.01) |
| bio/bio-yeast 1K,2K | 1530 (**0**) | 1530 (0.29) | 1530 (**0**) | 1530 (**0**) | 1530 (**0**) |
| col/ca-AstroPh 18K,197K | 160252 (**0.028**) | 160252 (0.974) | 160252 (0.261) | 160252 (1.723) | 160252 (2.515) |
| col/ca-citeseer 227K,814K | 451135 (**0.32**) | 451135 (2.245) | 451135 (8.006) | 451135 (5.648) | 451135 (3.732) |
| col/ca-coauthors-dblp 540K,15M | 5661008 (**5.791**) | 5661008 (30.954) | 5661008 (202.037) | 5661008 (12.041) | 5661008 (10.468) |
| col/ca-CondMat 21K,91K | 32050 (**0.004**) | 32050 (0.42) | 32050 (1.309) | 32050 (0.923) | 32050 (1.106) |
| col/ca-CSphd 2K,2K | 375 (**0**) | 375 (0.28) | 375 (**0**) | 375 (**0**) | 375 (**0**) |
| col/ca-dblp-2010 226K,716K | 276575 (**0.308**) | 276575 (1.461) | 276575 (17.93) | 276575 (3.237) | 276575 (2.645) |
| col/ca-dblp-2012 317K,1M | 714563 (**0.509**) | 714563 (1.781) | 714563 (20.722) | 714563 (1.17) | 714563 (0.982) |
| col/ca-Erdos992 6K,8K | 2878 (**0**) | 2878 (0.269) | 2878 (**0**) | 2878 (**0**) | 2878 (**0**) |
| col/ca-GrQc 4K,13K | 94651 (**0**) | 94651 (0.29) | 94651 (**0**) | 94651 (**0**) | 94651 (**0**) |
| col/ca-HepPh 11K,118K | 2860413 (**0**) | 2860413 (0.42) | 2860413 (0.017) | 2860413 (0.03) | 2860413 (0.041) |
| col/ca-hollywood-2009 1M,56M | 245095624 (**27.621**) | 245095624 (293.191) | 245095624 (41.9) | 245095624 (59.879) | 245095624 (45.771) |
| col/ca-MathSciNet 333K,821K | 32364 (**0.5**) | 32364 (3.309) | 32364 (36.371) | 32364 (32.127) | 32364 (28.829) |
| col/ca-netscience 379,914 | 4816 (**0**) | 4816 (0.279) | 4816 (**0**) | 4816 (0.008) | 4816 (0.006) |
| fb/socfb-A-anon 3M,24M | **32532** (**13.209**) | **32532** (47.128) | **32532**/ 29501.9(361.87) | **32532** (37.738) | **32532** (45.194) |
| fb/socfb-B-anon 3M,21M | **28384** (**24.585**) | **28384** (86.065) | **28384**/ 23797.3(463.451) | **28384** (129.526) | **28384** (181.901) |
| fb/socfb-Berkeley13 23K,852K | 87948 (**0.47**) | 87948 (5.747) | 87948 (1.404) | 87948 (9.414) | 87948 (12.341) |
| fb/socfb-CMU 7K,250K | 98830 (**0.053**) | 98830 (0.796) | 98830 (0.094) | 98830 (0.491) | 98830 (0.788) |
| fb/socfb-Duke14 10K,506K | **55940** (**0.198**) | **55940**/ 55929.2(1.639) | **55940** (1.806) | **55940** (0.358) | **55940** (0.67) |
| fb/socfb-Indiana 30K,1M | 110902 (**1.413**) | 110902 (8.831) | 110902 (5.826) | 110902 (5.871) | 110902 (4.778) |
| fb/socfb-MIT 6K,251K | 54696 (**0.123**) | 54696 (2.618) | 54696 (0.451) | 54696 (2.591) | 54696 (2.721) |
| fb/socfb-OR 63K,817K | 48615 (**0.529**) | 48615 (2.354) | 48615 (4.837) | 48615 (2.944) | 48615 (6.193) |
| fb/socfb-Penn94 42K,1M | 93079 (**1.365**) | 93079 (15.805) | 93079 (14.982) | 93079 (9.549) | 93079 (19.479) |
| fb/socfb-Stanford3 12K,568K | 131675 (**0.23**) | 131675 (1.624) | 131675 (0.46) | 131675 (1.369) | 131675 (1.302) |
| fb/socfb-Texas84 36K,2M | 129925 (**0.873**) | 129925 (5.387) | 129925 (4.254) | 129925 (5.33) | 129925 (6.197) |
| fb/socfb-uci-uni 59M,92M | **2210** (119.391) | **2210** (204.223) | N/A/ N/A(N/A) | **2210** (89.336) | **2210** (71.63) |
| fb/socfb-UCLA 20K,748K | 129325 (**0.29**) | 129325 (3.184) | 129325 (0.371) | 129325 (3.603) | 129325 (2.499) |
| fb/socfb-UConn 17K,605K | 122944 (**0.238**) | 122944 (1.642) | 122944 (0.51) | 122944 (2.173) | 122944 (1.639) |
| fb/socfb-UCSB37 15K,482K | 139342 (**0.265**) | 139342 (2.296) | 139342 (0.631) | 139342 (1.872) | 139342 (2.149) |
| fb/socfb-UF 35K,1M | 149419 (**1.326**) | 149419 (9.807) | 149419 (2.305) | 149419 (5.737) | 149419 (7.074) |
| fb/socfb-UIllinois | 160092 | 160092 | 160092 | 160092 | 160092 |

| Instance / Size | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| 31K,1M | **(0.822)** | (5.169) | (1.63) | (4.974) | (7.93) |
| fb/socfb-Wisconsin87 24K,836K | 65678 **(0.319)** | 65678 (4.267) | 65678 (1.22) | 65678 (3.932) | 65678 (3.952) |
| inf/inf-power 5K,7K | 1955 **(0)** | 1955 (0.27) | 1955 (0.065) | 1955 **(0)** | 1955 **(0)** |
| inf/inf-roadNet-CA 2M,3M | 1050 **(4.195)** | 1050 (6.534) | 975/817.9 (441.359) | 1050 (228.841) | 1050 (221.563) |
| inf/inf-roadNet-PA 1M,2M | 1164 **(1.704)** | 1164 (3.025) | 1164 824.4(261.547) | 1164 (32.653) | 1164 (33.221) |
| inf/inf-road-usa 24M,29M | **1092** (70.128) | **1092** (87.841) | N/A/ N/A(N/A) | 1017/ 864.2(521.612) | 1017/ 864.2(524.229) |
| int/ia-email-EU 32K,54K | 8155 **(0)** | 8155 (0.358) | 8155 (0.021) | 8155 (0.009) | 8155 (0.013) |
| int/ia-email-univ 1K,5K | 6537 **(0)** | 6537 (0.28) | 6537 (0) | 6537 (0) | 6537 (0) |
| int/ia-enron-large 34K,181K | 19860 **(0.008)** | 19860 (0.745) | 19860 (0.196) | 19860 (0.589) | 19860 (0.703) |
| int/ia-enron-only 143,623 | 2802 **(0)** | 2802 (0.23) | 2802 (0) | 2802 (0.003) | 2802 (0.007) |
| int/ia-fb-messages 1K,6K | 1154 **(0)** | 1154 (0.261) | 1154 (0) | 1154 (0) | 1154 (0) |
| int/ia-infect-dublin 410,3K | 12000 **(0)** | 12000 (0.28) | 12000 (0) | 12000 (0.004) | 12000 (0) |
| int/ia-infect-hyper 113,2K | 11403 **(0)** | 11403 (0.281) | 11403 (0) | 11403 (0) | 11403 (0) |
| int/ia-reality 7K,8K | 1142 **(0)** | 1142 (0.289) | 1142 (0) | 1142 (0) | 1142 (0) |
| int/ia-wiki-Talk 92K,361K | 12422 **(0.141)** | 12422 (1.295) | 12422 (1.08) | 12422 (0.443) | 12422 (0.501) |
| rec/rec-amazon 92K,126K | 1866 **(0.009)** | 1866 (0.429) | 1866 (29.845) | 1866 (0.517) | 1866 (0.53) |
| ret/rt-retweet 96,117 | 361 **(0)** | 361 (0.279) | 361 (0) | 361 (0) | 361 (0) |
| ret/rt-retweet-crawl 1M,2M | **8262** **(8.042)** | **8262** (20.597) | 8262/ 5707.2(151.553) | 8262/ 4868.4(115.35) | **8262** (101.195) |
| ret/rt-twitter-copen 761,1K | 795 **(0)** | 795 (0.27) | 795 (0) | 795 (0) | 795 (0) |
| sci/sc-ldoor 952K,21M | **40610** **(7.948)** | **40610** (33.821) | **40610**/ 39830(450.446) | **40610** (57.817) | **40610** (56.408) |
| sci/sc-msdoor 416K,9M | **40250** **(3.152)** | **40250** (17.262) | **40250**/ 40098(449.816) | **40250** (67.457) | **40250** (64.99) |
| sci/sc-nasasrb 55K,1M | 51040 **(0.4)** | 51040 (1.85) | 51040 (11.563) | 51040 (2.11) | 51040 (2.029) |
| sci/sc-pkustk11 88K,3M | 77580 **(0.952)** | 77580 (6.693) | 77580 (38.991) | 77580 (25.114) | 77580 (12.744) |
| sci/sc-pkustk13 95K,3M | 99915 **(2.884)** | 99915 (48.517) | 99915 (72.302) | 99915 (77.931) | 99915 (109.506) |
| sci/sc-pwtk 218K,6M | **51888** **(2.022)** | **51888** (8.322) | **51888**/ 51832.8(345.381) | **51888** (6.436) | **51888** (7.247) |
| sci/sc-shipsec1 140K,2M | 45126 **(0.639)** | 45126 (3.042) | 45126 (75.638) | 45126 (8.03) | 45126 (7.729) |
| sci/sc-shipsec5 179K,2M | 48576 **(0.86)** | 48576 (4.633) | 48576 (33.622) | 48576 (12.053) | 48576 (12.11) |
| soc/soc-BlogCatalog 89K,2M | 105265 (1.741) | 105265 (19.795) | 105265 (2.516) | 105265 (2.176) | 105265 **(1.662)** |
| soc/soc-brightkite 57K,213K | 67102 **(0.06)** | 67102 (2.731) | 67102 (7.834) | 67102 (3.308) | 67102 (5.91) |
| soc/soc-buzznet 101K,3M | 47775 (1.853) | 47775 (24.336) | 47775 **(1.148)** | 47775 (1.885) | 47775 (1.858) |
| soc/soc-delicious 536K,1M | 13850 **(0.66)** | 13850 (2.417) | 13850 (8.892) | 13850 (0.94) | 13850 (0.89) |
| soc/soc-digg 771K,6M | **123757** **(21.744)** | **123757** (267.384) | **123757**/ 123738.4(275.439) | **123757** (42.349) | **123757** (60.326) |
| soc/soc-dolphins 62,159 | 698 **(0)** | 698 (0.279) | 698 (0) | 698 (0) | 698 (0) |
| soc/soc-douban 155K,327K | 6695 (0.187) | 6695 (0.67) | 6695 (1.495) | 6695 (0.201) | 6695 **(0.159)** |
| soc/soc-epinions 27K,100K | 12685 **(0.047)** | 12685 (0.57) | 12685 (0.29) | 12685 (2.032) | 12685 (1.571) |
| soc/soc-flickr 514K,3M | 166552 **(2.002)** | 166552 (11.661) | 166552 (96.149) | 166552 (3.237) | 166552 (4.471) |
| soc/soc-flixster | 47685 | 47685 | 47685 | 47685 | 47685 |

| Dataset (V,E) | Col 1 | Col 2 | Col 3 | Col 4 | Col 5 |
|---|---|---|---|---|---|
| 3M,8M | (5.498) | (16.95) | (188.161) | (6.674) | **(5.006)** |
| soc/soc-FourSquare 639K,3M | 45982 **(5.915)** | 45982 (99.325) | 45982 (21.657) | 45982 (168.832) | 45982 (14.523) |
| soc/soc-gowalla 197K,950K | **30226** **(2.851)** | 30226 (37.038) | 30226 (26.358) | 30226/ 29466.4(390.045) | 30226 (347.044) |
| soc/soc-karate 34,78 | 369 **(0)** | 369 (0.258) | 369 (0) | 369 (0) | 369 (0) |
| soc/soc-lastfm 1M,5M | 11266 **(8.891)** | 11266 (12.439) | 11266 (118.135) | 11266 (34.966) | 11266 (24.438) |
| soc/soc-livejournal 4M,28M | **2289993** **(19.139)** | 2289993 (106.825) | 2157827/ 1247883.3(485.849) | **2289993/** 2134981.8(378.917) | **2289993/** 2212487.4(365.109) |
| soc/soc-LiveMocha 104K,2M | 11965 **(0.799)** | 11965 (3.407) | 11965 (0.859) | 11965 (0.932) | 11965 (0.849) |
| soc/soc-orkut 3M,106M | **105549/** 105475(475.155) | **105549/** 99305.1(435.907) | N/A/ N/A(N/A) | **105549/** 97568.7(233.93) | **105549/** 96304.1(272.138) |
| soc/soc-pokec 2M,22M | **38202** **(44.299)** | 38202 (123.91) | **38202/** 29166.9(411.257) | **38202/** 36942.1(477.04) | **38202** (491.217) |
| soc/soc-slashdot 70K,359K | 36275 **(0.065)** | 36275 (0.64) | 36275 (0.092) | 36275 (0.095) | 36275 (0.08) |
| soc/soc-twitter-follows 405K,713K | 1625 **(1.003)** | 1625 (3.162) | 1625 (32.846) | 1625 (2.944) | 1625 (1.934) |
| soc/soc-wiki-Vote 889,3K | 2091 **(0)** | 2091 (0.281) | 2091 (0) | 2091 (0) | 2091 (0) |
| soc/soc-youtube 496K,2M | 12799 **(0.8)** | 12799 (3.65) | 12799 (1.18) | 12799 (1.175) | 12799 (1.161) |
| soc/soc-youtube-snap 1M,3M | 13984 **(1.52)** | 13984 (8.772) | 13984 (23.304) | 13984 (2.809) | 13984 (1.82) |
| tec/tech-as-caida2007 26K,53K | 11085 **(0)** | 11085 (0.309) | 11085 (0.003) | 11085 (0) | 11085 (0) |
| tec/tech-as-skitter 2M,11M | 179915 **(10.25)** | 179915 (64.881) | 179915 (113.958) | 179915 (84.341) | 179915 (77.636) |
| tec/tech-internet-as 40K,85K | 13695 (0.008) | 13695 (0.349) | 13695 (0.011) | 13695 (0.109) | 13695 **(0.003)** |
| tec/tech-p2p-gnutella 63K,148K | 903 **(0.112)** | 903 (0.48) | 903 (7.451) | 903 (4.034) | 903 (5.542) |
| tec/tech-RL-caida 191K,608K | 13680 **(0.279)** | 13680 (1.108) | 13680 (1.315) | 13680 (0.583) | 13680 (0.58) |
| tec/tech-routers-rf 2K,7K | 12570 **(0)** | 12570 (0.281) | 12570 (0) | 12570 (0.026) | 12570 (0.019) |
| tec/tech-WHOIS 7K,57K | 165571 **(0.004)** | 165571 (0.831) | 165571 (0.403) | 165571 (4.724) | 165571 (4.642) |
| tem/scc_enron-only 151,10K | 767893 **(0)** | 767893 (0.29) | 767893 (0) | 767893 (0) | 767893 (0) |
| tem/scc_fb-forum 897,71K | 3593385 (0.542) | 3593385 (0.467) | 3593385 **(0.072)** | 3593385 (3.836) | 3593385 (1.685) |
| tem/scc_fb-messages 2K,532K | 25115753 **(0.379)** | 25115753 (1.831) | 25115753 (0.738) | 25115753 (10.764) | 25115753 (6.756) |
| tem/scc_infect-dublin 11K,176K | 346240 **(0.01)** | 346240 (0.49) | 346240 (0.191) | 346240 (1.37) | 346240 (1.838) |
| tem/scc_infect-hyper 113,6K | 616595 **(0)** | 616595 (0.27) | 616595 (0) | 616595 (0) | 616595 (0) |
| tem/scc_reality 7K,5M | **76649665** (44.377) | **76649665** (56.345) | **76649665** **(19.302)** | **76649665/** 76372857(393.69) | **76649665** (393.252) |
| tem/scc_retweet 18K,66K | 1368740 (0.362) | 1368740 (0.419) | 1368740 **(0.171)** | 1368740 (0.48) | 1368740 (0.753) |
| tem/scc_retweet-crawl 1M,24K | **19648** **(0.059)** | **19648** (0.462) | **19648/** 19126.4(340.887) | **19648** (0.27) | **19648** (0.261) |
| tem/scc_rt_alwefaq 4K,355 | 10900 **(0)** | 10900 (0.25) | 10900 (0.057) | 10900 (0) | 10900 (0) |
| tem/scc_rt_assad 2K,96 | 2302 **(0)** | 2302 (0.282) | 2302 (0.009) | 2302 (0) | 2302 (0) |
| tem/scc_rt_bahrain 5K,129 | 3041 **(0)** | 3041 (0.279) | 3041 (0.064) | 3041 (0) | 3041 (0) |
| tem/scc_rt_barackobama 10K,226 | 4597 **(0)** | 4597 (0.251) | 4597 (3.305) | 4597 (0) | 4597 (0) |
| tem/scc_rt_damascus 3K,41 | 902 **(0)** | 902 (0.261) | 902 (0.116) | 902 (0) | 902 (0) |
| tem/scc_rt_dash 6K,39 | 915 **(0)** | 915 (0.279) | 915 (1.483) | 915 (0) | 915 (0) |
| tem/scc_rt_gmanews 8K,1K | 24776 **(0)** | 24776 (0.292) | 24776 (0.335) | 24776 (0.009) | 24776 (0) |
| tem/scc_rt_gop | 191 | 191 | 191 | 191 | 191 |

| Instance | | | | | |
|---|---|---|---|---|---|
| 4K,7 | **(0)** | (0.259) | (0.893) | **(0)** | **(0)** |
| tem/scc_rt_http 6K,6 | 475 **(0)** | 475 (0.28) | 475 (4.643) | 475 **(0)** | 475 **(0)** |
| tem/scc_rt_israel 4K,12 | 187 **(0)** | 187 (0.281) | 187 (1.03) | 187 **(0)** | 187 **(0)** |
| tem/scc_rt_justinbieber 9K,442 | 14464 **(0)** | 14464 (0.28) | 14464 (0.937) | 14464 **(0)** | 14464 **(0)** |
| tem/scc_rt_ksa 6K,23 | 1550 **(0)** | 1550 (0.268) | 1550 (1.415) | 1550 **(0)** | 1550 **(0)** |
| tem/scc_rt_lebanon 3K,5 | 181 **(0)** | 181 (0.25) | 181 (1.46) | 181 **(0)** | 181 **(0)** |
| tem/scc_rt_libya 5K,26 | 385 **(0)** | 385 (0.289) | 385 (0.489) | 385 **(0)** | 385 **(0)** |
| tem/scc_rt_lolgop 10K,5K | 87958 **(0)** | 87958 (0.27) | 87958 (0.299) | 87958 (0.002) | 87958 (0.004) |
| tem/scc_rt_mittromney 8K,108 | 1298 **(0)** | 1298 (0.29) | 1298 (0.346) | 1298 **(0)** | 1298 **(0)** |
| tem/scc_rt_obama 3K,4 | 190 **(0)** | 190 (0.29) | 190 (0.805) | 190 **(0)** | 190 **(0)** |
| tem/scc_rt_occupy 3K,60 | 1178 **(0)** | 1178 (0.259) | 1178 (0.043) | 1178 **(0)** | 1178 **(0)** |
| tem/scc_rt_occupywallstnyc 4K,931 | 15460 **(0)** | 15460 (0.28) | 15460 (0.009) | 15460 **(0)** | 15460 **(0)** |
| tem/scc_rt_oman 4K,13 | 329 **(0)** | 329 (0.29) | 329 (0.688) | 329 **(0)** | 329 **(0)** |
| tem/scc_rt_onedirection 8K,368 | 35777 **(0)** | 35777 (0.269) | 35777 (0.435) | 35777 **(0)** | 35777 **(0)** |
| tem/scc_rt_p2 5K,15 | 177 **(0)** | 177 (0.25) | 177 (2.201) | 177 **(0)** | 177 **(0)** |
| tem/scc_rt_qatif 7K,11 | 295 **(0)** | 295 (0.291) | 295 (6.311) | 295 **(0)** | 295 (0.003) |
| tem/scc_rt_saudi 7K,91 | 3006 **(0)** | 3006 (0.27) | 3006 (1.254) | 3006 **(0)** | 3006 **(0)** |
| tem/scc_rt_tcot 5K,18 | 357 **(0)** | 357 (0.261) | 357 (0.527) | 357 **(0)** | 357 **(0)** |
| tem/scc_rt_tlot 4K,8 | 196 **(0)** | 196 (0.272) | 196 (0.508) | 196 **(0)** | 196 **(0)** |
| tem/scc_rt_uae 5K,12 | 361 **(0)** | 361 (0.269) | 361 (1.403) | 361 **(0)** | 361 **(0)** |
| tem/scc_rt_voteonedirection 2K,5 | 399 **(0)** | 399 (0.27) | 399 (0.161) | 399 **(0)** | 399 **(0)** |
| tem/scc_twitter-copen 9K,474K | 16912230 **(0.47)** | 16912230 (7.961) | 16912230 (1.656) | 16912230 (40.283) | 16912230 (27.56) |
| web/web-arabic-2005 164K,2M | 538994 (0.629) | 538994 (1.942) | 538994 (3.162) | 538994 **(0.609)** | 538994 (0.63) |
| web/web-BerkStan 12K,20K | 42566 **(0)** | 42566 (0.287) | 42566 (0.037) | 42566 **(0)** | 42566 **(0)** |
| web/web-edu 3K,6K | 59798 **(0)** | 59798 (0.29) | 59798 (0.008) | 59798 **(0)** | 59798 **(0)** |
| web/web-google 1K,3K | 15227 **(0)** | 15227 (0.281) | 15227 **(0)** | 15227 **(0)** | 15227 **(0)** |
| web/web-indochina-2004 11K,48K | 159250 **(0)** | 159250 (0.361) | 159250 (0.074) | 159250 (0.005) | 159250 (0.042) |
| web/web-it-2004 509K,7M | 9308691 **(2.939)** | 9308691 (10.115) | 9308691 (98.14) | 9308691 (6.531) | 9308691 (5.542) |
| web/web-polblogs 643,2K | 3820 **(0)** | 3820 (0.27) | 3820 **(0)** | 3820 **(0)** | 3820 **(0)** |
| web/web-sk-2005 121K,334K | 401124 **(0.035)** | 401124 (0.866) | 401124 (6.662) | 401124 (0.878) | 401124 (2.054) |
| web/web-spam 5K,37K | 19567 **(0.039)** | 19567 (0.61) | 19567 (0.05) | 19567 (3.271) | 19567 (4.674) |
| web/web-uk-2005 130K,12M | 12572200 **(3.73)** | 12572200 (14.379) | 12572200 (17.421) | 12572200 (6.149) | 12572200 (5.848) |
| web/web-webbase-2001 16K,26K | 36912 **(0)** | 36912 (0.661) | 36912 (1.202) | 36912 (1.932) | 36912 (1.121) |
| web/web-wikipedia2009 2M,5M | **46832** **(4.183)** | **46832** (18.645) | **46832**/46789.7 (184.192) | **46832**/46822.6 (360.346) | **46832** (218.143) |