

Table 1: Experimental results on graphs from network repository

Graphs	V , E	ReConSLS	CERS	LSMR	LSCC	LSCC+BMS
		Wmax/Wavg (time)	Wmax/Wavg (time)	Wmax/Wavg (time)	Wmax/Wavg (time)	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

31K,1M	(0.822)	(5.169)	(1.63)	(4.974)	(7.93)
fb/socfb-Wisconsin87	65678	65678	65678	65678	65678
24K,836K	(0.319)	(4.267)	(1.22)	(3.932)	(3.952)
inf/inf-power	1955	1955	1955	1955	1955
5K,7K	(0)	(0.27)	(0.065)	(0)	(0)
inf/inf-roadNet-CA	1050	1050	975/	1050	1050
2M,3M	(4.195)	(6.534)	817.9(441.359)	(228.841)	(221.563)
inf/inf-roadNet-PA	1164	1164	1164	1164	1164
1M,2M	(1.704)	(3.025)	824.4(261.547)	(32.653)	(33.221)
inf/inf-road-usa	1092	1092	N/A/	1017/	1017/
24M,29M	(70.128)	(87.841)	N/A(N/A)	864.2(521.612)	864.2(524.229)
int/ia-email-EU	8155	8155	8155	8155	8155
32K,54K	(0)	(0.358)	(0.021)	(0.009)	(0.013)
int/ia-email-univ	6537	6537	6537	6537	6537
1K,5K	(0)	(0.28)	(0)	(0)	(0)
int/ia-enron-large	19860	19860	19860	19860	19860
34K,181K	(0.008)	(0.745)	(0.196)	(0.589)	(0.703)
int/ia-enron-only	2802	2802	2802	2802	2802
143,623	(0)	(0.23)	(0)	(0.003)	(0.007)
int/ia-fb-messages	1154	1154	1154	1154	1154
1K,6K	(0)	(0.261)	(0)	(0)	(0)
int/ia-infect-dublin	12000	12000	12000	12000	12000
410,3K	(0)	(0.28)	(0)	(0.004)	(0)
int/ia-infect-hyper	11403	11403	11403	11403	11403
113,2K	(0)	(0.281)	(0)	(0)	(0)
int/ia-reality	1142	1142	1142	1142	1142
7K,8K	(0)	(0.289)	(0)	(0)	(0)
int/ia-wiki-Talk	12422	12422	12422	12422	12422
92K,361K	(0.141)	(1.295)	(1.08)	(0.443)	(0.501)
rec/rec-amazon	1866	1866	1866	1866	1866
92K,126K	(0.009)	(0.429)	(29.845)	(0.517)	(0.53)
ret/rt-retweet	361	361	361	361	361
96,117	(0)	(0.279)	(0)	(0)	(0)
ret/rt-retweet-crawl	8262	8262	8262/	8262/	8262
1M,2M	(8.042)	(20.597)	5707.2(151.553)	4868.4(115.35)	(101.195)
ret/rt-twitter-copen	795	795	795	795	795
761,1K	(0)	(0.27)	(0)	(0)	(0)
sci/sc-ldoor	40610	40610	40610/	40610	40610
952K,21M	(7.948)	(33.821)	39830(450.446)	(57.817)	(56.408)
sci/sc-msdoor	40250	40250	40250/	40250	40250
416K,9M	(3.152)	(17.262)	40098(449.816)	(67.457)	(64.99)
sci/sc-nasasrb	51040	51040	51040	51040	51040
55K,1M	(0.4)	(1.85)	(11.563)	(2.11)	(2.029)
sci/sc-pkustkl1	77580	77580	77580	77580	77580
88K,3M	(0.952)	(6.693)	(38.991)	(25.114)	(12.744)
sci/sc-pkustkl3	99915	99915	99915	99915	99915
95K,3M	(2.884)	(48.517)	(72.302)	(77.931)	(109.506)
sci/sc-pwtk	51888	51888	51888/	51888	51888
218K,6M	(2.022)	(8.322)	51832.8(345.381)	(6.436)	(7.247)
sci/sc-shipsec1	45126	45126	45126	45126	45126
140K,2M	(0.639)	(3.042)	(75.638)	(8.03)	(7.729)
sci/sc-shipsec5	48576	48576	48576	48576	48576
179K,2M	(0.86)	(4.633)	(33.622)	(12.053)	(12.11)
soc/soc-BlogCatalog	105265	105265	105265	105265	105265
89K,2M	(1.741)	(19.795)	(2.516)	(2.176)	(1.662)
soc/soc-brightkite	67102	67102	67102	67102	67102
57K,213K	(0.06)	(2.731)	(7.834)	(3.308)	(5.91)
soc/soc-buzznet	47775	47775	47775	47775	47775
101K,3M	(1.853)	(24.336)	(1.148)	(1.885)	(1.858)
soc/soc-delicious	13850	13850	13850	13850	13850
536K,1M	(0.66)	(2.417)	(8.892)	(0.94)	(0.89)
soc/soc-digg	123757	123757	123757/	123757	123757
771K,6M	(21.744)	(267.384)	123738.4(275.439)	(42.349)	(60.326)
soc/soc-dolphins	698	698	698	698	698
62,159	(0)	(0.279)	(0)	(0)	(0)
soc/soc-douban	6695	6695	6695	6695	6695
155K,327K	(0.187)	(0.67)	(1.495)	(0.201)	(0.159)
soc/soc-epinions	12685	12685	12685	12685	12685
27K,100K	(0.047)	(0.57)	(0.29)	(2.032)	(1.571)
soc/soc-flickr	166552	166552	166552	166552	166552
514K,3M	(2.002)	(11.661)	(96.149)	(3.237)	(4.471)
soc/soc-flixster	47685	47685	47685	47685	47685

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

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