

Table 1: Comparative results on SET-1 instances

Instance	V	E <sub>p</sub>	E <sub>r</sub>	CB&B		LA-B&B		ILS-VND		ALS		RLS	
				BKV	time(s)	BKV	time(s)	BKV	htime(s)	BKV	htime(s)	BKV	htime(s)
p = 0.25, Setting 1													
brock200.2.A	200	7,416	2,460	986	280	986	2	986	<1	986	<1	986	<1
brock400.2.A	400	44,847	14,939	765	441	765	1	765	<1	765	<1	765	<1
C125.9.A	125	5,250	1,713	454	<1	454	<1	454	<1	454	<1	454	<1
C250.9.A	250	20,940	7,044	581	10	581	<1	581	<1	581	<1	581	<1
gen200.p0.9.55.A	200	13,434	4,176	535	4	535	<1	535	<1	535	<1	535	<1
gen400.p0.9.75.A	400	53,671	18,149	628	82	628	<1	628	3	628	<1	628	<1
hamming8-4.A	256	15,580	5,284	1,094	240	1,094	<1	1,094	<1	1,094	<1	1,094	<1
keller4.A	171	7,057	2,378	941	15	941	<1	941	<1	941	<1	941	<1
MANN.a27.A	378	53,050	17,501	533	28	533	<1	533	<1	533	<1	533	<1
p.hat300-1.A	300	8,239	2,694	2,308	10,800	2,680	10,800	2,744	<1	2,744	<1	2,744	<1
p.hat300-2.A	300	16,403	5,525	2,076	5,182	2,076	608	2,076	<1	2,076	<1	2,076	<1
p.hat300-3.A	300	25,132	8,258	739	100	739	<1	739	<1	739	<1	739	<1
brock200.2.B	200	7,416	2,460	962	276	962	2	962	<1	962	<1	962	<1
brock400.2.B	400	44,847	14,939	741	445	741	1	741	<1	741	<1	741	<1
C125.9.B	125	5,250	1,713	437	1	437	<1	437	<1	437	<1	437	<1
C250.9.B	250	20,940	7,044	549	11	549	<1	549	<1	549	<1	549	<1
gen200.p0.9.55.B	200	13,434	4,176	510	5	510	<1	510	<1	510	<1	510	<1
gen400.p0.9.75.B	400	53,671	18,149	595	80	595	<1	595	<1	595	<1	595	<1
hamming8-4.B	256	15,580	5,284	1,094	234	1,094	<1	1,094	<1	1,094	<1	1,094	<1
keller4.B	171	7,057	2,378	941	15	941	<1	941	<1	941	<1	941	<1
MANN.a27.B	378	53,050	17,501	503	31	503	<1	503	<1	503	<1	503	<1
p.hat300-1.B	300	8,239	2,694	2,259	10,800	2,643	10,800	2,712	<1	2,712	<1	2,712	<1
p.hat300-2.B	300	16,403	5,525	2,062	5,194	2,062	680	2,062	<1	2,062	<1	2,062	<1
p.hat300-3.B	300	25,132	8,258	713	102	713	<1	713	<1	713	<1	713	<1
brock200.2.C	200	7,416	2,460	932	280	932	2	932	<1	932	<1	932	<1
brock400.2.C	400	44,847	14,939	698	455	698	2	698	<1	698	<1	698	<1
C125.9.C	125	5,250	1,713	403	1	403	<1	403	<1	403	<1	403	<1
C250.9.C	250	20,940	7,044	502	12	502	<1	502	<1	502	<1	502	<1
gen200.p0.9.55.C	200	13,434	4,176	467	4	467	<1	467	<1	467	<1	467	<1
gen400.p0.9.75.C	400	53,671	18,149	533	81	533	<1	533	<1	533	<1	533	<1
hamming8-4.C	256	15,580	5,284	1,094	229	1,094	1	1,094	<1	1,094	<1	1,094	<1
keller4.C	171	7,057	2,378	941	14	941	<1	941	<1	941	<1	941	<1
MANN.a27.C	378	53,050	17,501	443	30	443	<1	443	<1	443	<1	443	<1
p.hat300-1.C	300	8,239	2,694	2,205	10,800	2,566	10,800	2,649	<1	2,649	<1	2,649	<1
p.hat300-2.C	300	16,403	5,525	2,033	5,360	2,033	778	2,033	<1	2,033	<1	2,033	<1
p.hat300-3.C	300	25,132	8,258	688	111	688	<1	688	<1	688	<1	688	<1
p = 0.25, Setting 2													
brock200.2.A	200	7,416	2,460	1,489	452	1,489	5	1,489	<1	1,489	<1	1,489	<1
brock400.2.A	400	44,847	14,939	1,084	593	1,084	2	1,084	2	1,084	<1	1,084	<1
C125.9.A	125	5,250	1,713	685	1	685	<1	685	<1	685	<1	685	<1
C250.9.A	250	20,940	7,044	785	12	785	<1	785	<1	785	<1	785	<1
gen200.p0.9.55.A	200	13,434	4,176	778	5	778	<1	778	<1	778	<1	778	<1
gen400.p0.9.75.A	400	53,671	18,149	882	94	882	<1	882	<1	882	<1	882	<1
hamming8-4.A	256	15,580	5,284	1,790	331	1,790	2	1,790	<1	1,790	<1	1,790	<1
keller4.A	171	7,057	2,378	1,500	23	1,500	<1	1,500	<1	1,500	<1	1,500	<1
MANN.a27.A	378	53,050	17,501	683	32	683	<1	683	<1	683	<1	683	<1
p.hat300-1.A	300	8,239	2,694	3,981	10,800	4,182	10,800	4,674	1	4,674	<1	4,674	<1
p.hat300-2.A	300	16,403	5,525	2,994	8,743	2,994	9,402	2,994	<1	2,994	<1	2,994	<1
p.hat300-3.A	300	25,132	8,258	1,180	137	1,180	1	1,180	<1	1,180	<1	1,180	<1
brock200.2.B	200	7,416	2,460	739	456	739	5	739	<1	739	<1	739	<1
brock400.2.B	400	44,847	14,939	534	611	534	2	534	2	534	<1	534	<1
C125.9.B	125	5,250	1,713	335	1	335	<1	335	<1	335	<1	335	<1
C250.9.B	250	20,940	7,044	385	13	385	<1	385	<1	385	<1	385	<1
gen200.p0.9.55.B	200	13,434	4,176	378	5	378	<1	378	<1	378	<1	378	<1
gen400.p0.9.75.B	400	53,671	18,149	432	96	432	<1	432	<1	432	<1	432	<1
hamming8-4.B	256	15,580	5,284	890	333	890	2	890	<1	890	<1	890	<1
keller4.B	171	7,057	2,378	750	22	750	<1	750	<1	750	<1	750	<1
MANN.a27.B	378	53,050	17,501	333	34	333	<1	333	<1	333	<1	333	<1
p.hat300-1.B	300	8,239	2,694	1,981	10,800	2,082	10,800	2,324	2	2,324	<1	2,324	<1
p.hat300-2.B	300	16,403	5,525	1,494	8,947	1,494	10,800	1,494	<1	1,494	<1	1,494	<1
p.hat300-3.B	300	25,132	8,258	580	134	580	1	580	1	580	<1	580	<1
brock200.2.C	200	7,416	2,460	364	460	364	5	364	<1	364	<1	364	<1
brock400.2.C	400	44,847	14,939	259	646	259	2	259	1	259	<1	259	<1
C125.9.C	125	5,250	1,713	160	1	160	<1	160	<1	160	<1	160	<1
C250.9.C	250	20,940	7,044	185	13	185	<1	185	<1	185	<1	185	<1
gen200.p0.9.55.C	200	13,434	4,176	178	5	178	<1	178	<1	178	<1	178	<1
gen400.p0.9.75.C	400	53,671	18,149	207	98	207	<1	207	<1	207	<1	207	<1
hamming8-4.C	256	15,580	5,284	440	355	440	2	440	<1	440	<1	440	<1
keller4.C	171	7,057	2,378	375	23	375	<1	375	<1	375	<1	375	<1
MANN.a27.C	378	53,050	17,501	158	33	158	<1	158	<1	158	<1	158	<1
p.hat300-1.C	300	8,239	2,694	981	10,800	1,032	10,800	1,149	1	1,149	<1	1,149	<1
p.hat300-2.C	300	16,403	5,525	744	10,800	744	10,658	744	<1	744	<1	744	<1
p.hat300-3.C	300	25,132	8,258	280	142	280	<1	280	<1	280	<1	280	<1
p = 0.50, Setting 1													
brock200.2.A	200	4,916	4,960	1,298	8,390	1,298	93	1,298	<1	1,298	<1	1,298	<1
brock400.2.A	400	29,711	30,075	1,103	10,800	1,123	355	1,123	<1	1,123	<1	1,123	<1
C125.9.A	125	3,500	3,463	627	5	627	<1	627	<1	627	<1	627	<1
C250.9.A	250	14,017	13,967	817	266	817	1	817	<1	817	<1	817	<1
gen200.p0.9.55.A	200	8,908	9,002	785	68	785	<1	785	<1	785	<1	785	<1
gen400.p0.9.75.A	400	35,823	35,997	895	5,699	895	29	895	<1	895	<1	895	<1
hamming8-4.A	256	10,329	10,535	1,301	7,608	1,301	49	1,301	<1	1,301	<1	1,301	<1
keller4.A	171	4,738	4,697	1,118	153	1,118	2	1,118	<1	1,118	<1	1,118	<1
MANN.a27.A	378	35,345	35,206	812	1,217	812	6	812	<1	812	<1	812	<1
p.hat300-1.A	300	5,505	5,428	2,568	10,800	3,026	10,800	3,129	<1	3,129	<1	3,129	<1
p.hat300-2.A	300	11,051	10,877	2,063	10,800	2,477	10,800	2,477	<1	2,477	<1	2,477	<1
p.hat300-3.A	300	16,820	16,570	1,029	3,748	1,029	38	1,029	<1	1,029	<1	1,029	<1

Continued on next page

Table 1 – Continued from previous page

Instance	V	E <sub>p</sub>	E <sub>r</sub>	CB&B		LA-B&B		ILS-VND		ALS		RLS	
				BKV	time(s)	BKV	time(s)	BKV	htime(s)	BKV	htime(s)	BKV	htime(s)
brock200.2.B	200	4,916	4,960	1,224	9,589	1,224	125	1,224	<1	1,224	<1	1,224	<1
brock400.2.B	400	29,711	30,075	1,010	10,800	1,035	445	1,035	<1	1,035	<1	1,035	<1
C125.9.B	125	3,500	3,463	582	5	582	<1	582	<1	582	<1	582	<1
C250.9.B	250	14,017	13,967	744	292	744	2	744	<1	744	<1	744	<1
gen200.p0.9.55.B	200	8,908	9,002	716	72	716	<1	716	<1	716	<1	716	<1
gen400.p0.9.75.B	400	35,823	35,997	805	6,602	805	34	805	<1	805	<1	805	<1
hamming8.4.B	256	10,329	10,535	1,255	7,780	1,255	62	1,255	<1	1,255	<1	1,255	<1
keller4.B	171	4,738	4,697	1,094	156	1,094	2	1,094	<1	1,094	<1	1,094	<1
MANN.a27.B	378	35,345	35,206	707	1,417	707	7	707	1	707	<1	707	<1
p.hat300.1.B	300	5,505	5,428	2,492	10,800	2,950	10,800	3,023	<1	3,023	<1	3,023	<1
p.hat300.2.B	300	11,051	10,877	1,979	10,800	2,405	10,800	2,405	<1	2,405	<1	2,405	<1
p.hat300.3.B	300	16,820	16,570	967	4,067	967	46	967	<1	967	<1	967	<1
brock200.2.C	200	4,916	4,960	1,101	10,800	1,101	204	1,101	<1	1,101	<1	1,101	<1
brock400.2.C	400	29,711	30,075	861	10,800	892	691	892	<1	892	<1	892	<1
C125.9.C	125	3,500	3,463	506	6	506	<1	506	<1	506	<1	506	<1
C250.9.C	250	14,017	13,967	623	334	623	2	623	<1	623	<1	623	<1
gen200.p0.9.55.C	200	8,908	9,002	597	91	597	<1	597	<1	597	<1	597	<1
gen400.p0.9.75.C	400	35,823	35,997	651	7,858	651	50	651	<1	651	<1	651	<1
hamming8.4.C	256	10,329	10,535	1,184	7,447	1,184	85	1,184	<1	1,184	<1	1,184	<1
keller4.C	171	4,738	4,697	1,049	145	1,049	3	1,049	<1	1,049	<1	1,049	<1
MANN.a27.C	378	35,345	35,206	552	1,849	552	10	552	1	552	<1	552	<1
p.hat300.1.C	300	5,505	5,428	2,303	10,800	2,818	10,800	2,897	<1	2,897	<1	2,897	<1
p.hat300.2.C	300	11,051	10,877	1,852	10,800	2,263	10,800	2,263	<1	2,263	<1	2,263	<1
p.hat300.3.C	300	16,820	16,570	851	4,709	851	69	851	<1	851	<1	851	<1
p = 0.50, Setting 2													
brock200.2.A	200	4,916	4,960	2,034	10,800	2,034	677	2,034	<1	2,034	<1	2,034	<1
brock400.2.A	400	29,711	30,075	1,628	10,800	1,630	1,323	1,630	11	1,630	<1	1,630	<1
C125.9.A	125	3,500	3,463	1,152	7	1,152	<1	1,152	<1	1,152	<1	1,152	<1
C250.9.A	250	14,017	13,967	1,236	343	1,236	3	1,236	3	1,236	<1	1,236	<1
gen200.p0.9.55.A	200	8,908	9,002	1,151	113	1,151	<1	1,151	3	1,151	<1	1,151	<1
gen400.p0.9.75.A	400	35,823	35,997	1,335	8,467	1,335	69	1,335	2	1,335	<1	1,335	<1
hamming8.4.A	256	10,329	10,535	2,155	10,800	2,155	166	2,155	1	2,155	<1	2,155	<1
keller4.A	171	4,738	4,697	1,759	353	1,759	5	1,759	<1	1,759	<1	1,759	<1
MANN.a27.A	378	35,345	35,206	1,226	1,950	1,226	10	1,226	12	1,226	<1	1,226	<1
p.hat300.1.A	300	5,505	5,428	4,740	10,800	5,637	10,800	5,637	<1	5,637	<1	5,637	<1
p.hat300.2.A	300	11,051	10,877	3,342	10,800	3,750	10,800	3,943	<1	3,943	<1	3,943	<1
p.hat300.3.A	300	16,820	16,570	1,658	7,243	1,658	157	1,658	<1	1,658	<1	1,658	<1
brock200.2.B	200	4,916	4,960	984	10,800	984	757	984	<1	984	<1	984	<1
brock400.2.B	400	29,711	30,075	765	10,800	780	1,385	780	10	780	<1	780	<1
C125.9.B	125	3,500	3,463	552	7	552	<1	552	<1	552	<1	552	<1
C250.9.B	250	14,017	13,967	586	391	586	3	586	4	586	<1	586	<1
gen200.p0.9.55.B	200	8,908	9,002	551	121	551	<1	551	1	551	<1	551	<1
gen400.p0.9.75.B	400	35,823	35,997	635	9,395	635	72	635	<1	635	<1	635	<1
hamming8.4.B	256	10,329	10,535	1,055	10,800	1,055	163	1,055	<1	1,055	<1	1,055	<1
keller4.B	171	4,738	4,697	859	367	859	5	859	<1	859	<1	859	<1
MANN.a27.B	378	35,345	35,206	576	2,161	576	11	576	13	576	<1	576	<1
p.hat300.1.B	300	5,505	5,428	2,340	10,800	2,325	10,800	2,787	<1	2,787	<1	2,787	<1
p.hat300.2.B	300	11,051	10,877	1,642	10,800	1,850	10,800	1,943	<1	1,943	<1	1,943	<1
p.hat300.3.B	300	16,820	16,570	808	7,790	808	161	808	<1	808	<1	808	<1
brock200.2.C	200	4,916	4,960	459	10,800	459	934	459	<1	459	<1	459	<1
brock400.2.C	400	29,711	30,075	341	10,800	355	1,711	355	12	355	<1	355	<1
C125.9.C	125	3,500	3,463	252	8	252	<1	252	<1	252	<1	252	<1
C250.9.C	250	14,017	13,967	261	501	261	3	261	3	261	<1	261	<1
gen200.p0.9.55.C	200	8,908	9,002	251	146	251	1	251	2	251	<1	251	<1
gen400.p0.9.75.C	400	35,823	35,997	285	10,800	285	83	285	2	285	<1	285	<1
hamming8.4.C	256	10,329	10,535	505	10,800	505	170	505	<1	505	<1	505	<1
keller4.C	171	4,738	4,697	409	389	409	5	409	<1	409	<1	409	<1
MANN.a27.C	378	35,345	35,206	251	2,666	251	13	251	10	251	<1	251	<1
p.hat300.1.C	300	5,505	5,428	1,138	10,800	1,125	10,800	1,362	<1	1,362	<1	1,362	<1
p.hat300.2.C	300	11,051	10,877	788	10,800	900	10,800	943	<1	943	<1	943	<1
p.hat300.3.C	300	16,820	16,570	383	9,014	383	178	383	<1	383	<1	383	<1
p = 0.75, Setting 1													
brock200.2.A	200	2,438	7,438	1,615	10,800	1,851	10,800	1,885	<1	1,885	<1	1,885	<1
brock400.2.A	400	14,751	45,035	1,403	10,800	1,667	10,800	1,728	5	1,728	<1	1,728	<1
C125.9.A	125	1,733	5,230	1,023	247	1,023	4	1,023	<1	1,023	<1	1,023	<1
C250.9.A	250	7,073	20,911	1,200	10,800	1,236	5,143	1,236	2	1,236	<1	1,236	<1
gen200.p0.9.55.A	200	4,425	13,485	1,186	10,800	1,206	601	1,206	<1	1,206	<1	1,206	<1
gen400.p0.9.75.A	400	18,063	53,757	1,155	10,800	1,490	10,800	1,490	<1	1,490	<1	1,490	<1
hamming8.4.A	256	5,173	15,691	1,549	10,800	1,723	10,800	1,759	<1	1,759	<1	1,759	<1
keller4.A	171	2,400	7,035	1,400	10,800	1,434	1573	1,434	<1	1,434	<1	1,434	<1
MANN.a27.A	378	17,580	52,971	1,313	10,800	1,323	10,800	1,323	<1	1,323	<1	1,323	<1
p.hat300.1.A	300	2,734	8,199	2,504	10,800	3,932	10,800	4,164	<1	4,164	<1	4,164	<1
p.hat300.2.A	300	5,603	16,325	2,120	10,800	2,902	10,800	2,990	1	2,990	<1	2,990	<1
p.hat300.3.A	300	8,388	25,002	1,350	10,800	1,561	10,800	1,564	<1	1,564	<1	1,564	<1
brock200.2.B	200	2,438	7,438	1,416	10,800	1,602	10,800	1,641	<1	1,641	<1	1,641	<1
brock400.2.B	400	14,751	45,035	1,129	10,800	1,341	10,800	1,386	2	1,386	<1	1,386	<1
C125.9.B	125	1,733	5,230	856	395	856	8	856	<1	856	<1	856	<1
C250.9.B	250	7,073	20,911	960	10,800	1,001	10,800	1,001	1	1,001	<1	1,001	<1
gen200.p0.9.55.B	200	4,425	13,485	961	10,800	983	1585	983	<1	983	<1	983	<1
gen400.p0.9.75.B	400	18,063	53,757	920	10,800	1,105	10,800	1,120	<1	1,120	<1	1,120	<1
hamming8.4.B	256	5,173	15,691	1,356	10,800	1,486	10,800	1,579	<1	1,579	<1	1,579	<1
keller4.B	171	2,400	7,035	1,230	10,800	1,268	4468	1,268	<1	1,268	<1	1,268	<1
MANN.a27.B	378	17,580	52,971	922	10,800	1,011	10,800	1,021	<1	1,021	<1	1,021	<1
p.hat300.1.B	300	2,73											

Table 1 – Continued from previous page

Instance	$ V $	$ E_p $	$ E_r $	CB&B		LA-B&B		ILS-VND		ALS		RLS	
				BKV	time(s)	BKV	time(s)	BKV	htime(s)	BKV	htime(s)	BKV	htime(s)
C125.9.C	125	1,733	5,230	<b>644</b>	10,800	<b>644</b>	45	<b>644</b>	<1	<b>644</b>	<1	<b>644</b>	<1
C250.9.C	250	7,073	20,911	688	10,800	<b>734</b>	10,800	<b>734</b>	1	<b>734</b>	<1	<b>734</b>	<1
gen200_p0.9.55.C	200	4,425	13,485	707	10,800	<b>727</b>	9,879	<b>727</b>	<1	<b>727</b>	<1	<b>727</b>	<1
gen400_p0.9.75.C	400	18,063	53,757	613	10,800	756	10,800	<b>772</b>	1	<b>772</b>	<1	<b>772</b>	<1
hamming8-4.C	256	5,173	15,691	1,120	10,800	1,248	10,800	<b>1,378</b>	<1	<b>1,378</b>	<1	<b>1,378</b>	<1
keller4.C	171	2,400	7,035	1,060	10,800	<b>1,109</b>	10,800	<b>1,109</b>	<1	<b>1,109</b>	<1	<b>1,109</b>	<1
MANN_a27.C	378	17,580	52,971	583	10,800	648	10,800	<b>651</b>	2	<b>651</b>	<1	<b>651</b>	<1
p_hat300-1.C	300	2,734	8,199	1,866	10,800	3,191	10,800	<b>3,480</b>	<1	<b>3,480</b>	<1	<b>3,480</b>	<1
p_hat300-2.C	300	5,603	16,325	1,511	10,800	2,249	10,800	<b>2,473</b>	<1	<b>2,473</b>	<1	<b>2,473</b>	<1
p_hat300-3.C	300	8,388	25,002	886	10,800	919	10,800	<b>1,004</b>	<1	<b>1,004</b>	<1	<b>1,004</b>	<1
<i>p</i> = 0.75, Setting 2													
brock200.2.A	200	2,438	7,438	2,999	10,800	3,078	10,800	<b>3,326</b>	8	<b>3,326</b>	<1	<b>3,326</b>	<1
brock400.2.A	400	14,751	45,035	2,603	10,800	2,787	10,800	<b>2,941</b>	12	<b>2,941</b>	1	<b>2,941</b>	3
C125.9.A	125	1,733	5,230	<b>1,837</b>	365	<b>1,837</b>	62.71	<b>1,837</b>	<1	<b>1,837</b>	<1	<b>1,837</b>	<1
C250.9.A	250	7,073	20,911	2,011	10,800	<b>2,171</b>	10,800	<b>2,171</b>	5	<b>2,171</b>	<1	<b>2,171</b>	<1
gen200_p0.9.55.A	200	4,425	13,485	2,094	10,800	<b>2,096</b>	7,832	<b>2,096</b>	<1	<b>2,096</b>	<1	<b>2,096</b>	<1
gen400_p0.9.75.A	400	18,063	53,757	2,164	10,800	2,310	10,800	<b>2,404</b>	19	<b>2,404</b>	<1	<b>2,404</b>	1
hamming8-4.A	256	5,173	15,691	2,813	10,800	<b>3,124</b>	10,800	<b>3,124</b>	1	<b>3,124</b>	<1	<b>3,124</b>	<1
keller4.A	171	2,400	7,035	2,532	10,800	<b>2,690</b>	10,800	<b>2,690</b>	<1	<b>2,690</b>	<1	<b>2,690</b>	<1
MANN_a27.A	378	17,580	52,971	1,976	10,800	2,206	10,800	<b>2,208</b>	<1	<b>2,208</b>	<1	<b>2,208</b>	<1
p_hat300-1.A	300	2,734	8,199	5,566	10,800	6,666	10,800	<b>7,899</b>	25	<b>7,899</b>	<1	<b>7,899</b>	<1
p_hat300-2.A	300	5,603	16,325	4,102	10,800	4,714	10,800	<b>5,343</b>	<1	<b>5,343</b>	<1	<b>5,343</b>	<1
p_hat300-3.A	300	8,388	25,002	2,477	10,800	2,658	10,800	<b>2,838</b>	2	<b>2,838</b>	<1	<b>2,838</b>	<1
brock200.2.B	200	2,438	7,438	1,398	10,800	1,427	10,800	<b>1,533</b>	<1	<b>1,533</b>	<1	<b>1,533</b>	<1
brock400.2.B	400	14,751	45,035	1,161	10,800	1,210	10,800	<b>1,291</b>	16	<b>1,291</b>	1	<b>1,291</b>	4
C125.9.B	125	1,733	5,230	<b>837</b>	523	<b>837</b>	84	<b>837</b>	<1	<b>837</b>	<1	<b>837</b>	<1
C250.9.B	250	7,073	20,911	911	10,800	969	10,800	<b>971</b>	3	<b>971</b>	<1	<b>971</b>	<1
gen200_p0.9.55.B	200	4,425	13,485	944	10,800	<b>946</b>	10,800	<b>946</b>	<1	<b>946</b>	<1	<b>946</b>	<1
gen400_p0.9.75.B	400	18,063	53,757	936	10,800	1,010	10,800	1,052	11	<b>1,054</b>	1	<b>1,054</b>	1
hamming8-4.B	256	5,173	15,691	1,309	10,800	<b>1,474</b>	10,800	<b>1,474</b>	<1	<b>1,474</b>	<1	<b>1,474</b>	<1
keller4.B	171	2,400	7,035	1,190	10,800	1,240	10,800	<b>1,254</b>	<1	<b>1,254</b>	<1	<b>1,254</b>	<1
MANN_a27.B	378	17,580	52,971	875	10,800	956	10,800	<b>958</b>	11	<b>958</b>	<1	<b>958</b>	<1
p_hat300-1.B	300	2,734	8,199	2,666	10,800	3,216	10,800	<b>3,818</b>	2	<b>3,818</b>	<1	<b>3,818</b>	<1
p_hat300-2.B	300	5,603	16,325	1,952	10,800	2,177	10,800	<b>2,543</b>	<1	<b>2,543</b>	<1	<b>2,543</b>	<1
p_hat300-3.B	300	8,388	25,002	1,101	10,800	1,208	10,800	<b>1,288</b>	2	<b>1,288</b>	<1	<b>1,288</b>	<1
brock200.2.C	200	2,438	7,438	607	10,800	607	10,800	<b>658</b>	<1	<b>658</b>	<1	<b>658</b>	<1
brock400.2.C	400	14,751	45,035	461	10,800	465	10,800	<b>500</b>	3	<b>500</b>	<1	<b>500</b>	<1
C125.9.C	125	1,733	5,230	<b>337</b>	1,519	<b>337</b>	204	<b>337</b>	<1	<b>337</b>	<1	<b>337</b>	<1
C250.9.C	250	7,073	20,911	359	10,800	370	10,800	<b>372</b>	5	<b>372</b>	<1	<b>372</b>	<1
gen200_p0.9.55.C	200	4,425	13,485	352	10,800	<b>371</b>	10,800	<b>371</b>	<1	<b>371</b>	<1	<b>371</b>	<1
gen400_p0.9.75.C	400	18,063	53,757	356	10,800	379	10,800	<b>395</b>	16	<b>395</b>	<1	<b>395</b>	<1
hamming8-4.C	256	5,173	15,691	556	10,800	649	10,800	<b>652</b>	<1	<b>652</b>	<1	<b>652</b>	<1
keller4.C	171	2,400	7,035	510	10,800	554	10,800	<b>558</b>	<1	<b>558</b>	<1	<b>558</b>	<1
MANN_a27.C	378	17,580	52,971	325	10,800	<b>335</b>	10,800	<b>335</b>	11	<b>335</b>	<1	<b>335</b>	<1
p_hat300-1.C	300	2,734	8,199	1,205	10,800	1,491	10,800	<b>1,793</b>	1	<b>1,793</b>	<1	<b>1,793</b>	<1
p_hat300-2.C	300	5,603	16,325	854	10,800	981	10,800	<b>1,159</b>	<1	<b>1,159</b>	<1	<b>1,159</b>	<1
p_hat300-3.C	300	8,388	25,002	453	10,800	494	10,800	<b>529</b>	1	<b>529</b>	<1	<b>529</b>	<1

The detailed comparative results on SET-2 and SET-3 are presented in Tables 2 and 3. The first four columns list instance information. The remaining columns show the best-known objective value ( $BKV$ ), the number of vertices in the  $BKV$  solution ( $|V_I|$ ), the mean running time for the heuristic algorithm to first hit the  $BKV$  ( $htime$ ), the kernel graph size ( $|V_{ker}|$ ) and the time of generating a kernel ( $time_{ker}$ ). The last two rows report statistical results. Values marked with \* denote the optimal objective value. Note that RLS's  $htime$  includes the pre-processing time for building graph kernels. The detailed ablation results on SET-2 and SET-3 are presented in Tables 4.

Table 2 Comparative results of RLS on SET-2 instances

Instance	V	$ E_p $	$ E_r $	CPLEX			LA-B&B			ALS			RLS				
				BKV	$ V_f $	htime(s)	BKV	$ V_f $	htime(s)	BKV	$ V_f $	htime(s)	BKV	$ V_f $	htime(s)	$ V_{\text{set}}$	time <sub>tot</sub> (s)
bio-yeast	1,458	980	968	<b>68,574*</b>	1,111	<1	66,545	1,062	2	68,572	1,113	9	<b>68,574*</b>	1,111	<1	0	<1
soc-wiki-Vote	889	727	2,187	<b>37,358*</b>	648	<1	35,973	615	<1	<b>37,358*</b>	648	8	<b>37,358*</b>	648	<1	0	<1
vc-exact.131	2,980	1,191	4,169	<b>109,641*</b>	2,098	<1	107,812	2,045	14	109,392	2,121	14	<b>109,641*</b>	2,098	<1	0	<1
web-edu	3,031	4,813	1,661	<b>114,140*</b>	1,752	<1	109,856	1,644	10	113,781	1,746	16	<b>114,140*</b>	1,753	<1	98	<1
MANN.a81	3,321	3,118	3,362	<b>117,327*</b>	2,084	<1	114,616	1,999	16	116,907	2,125	14	<b>117,327*</b>	2,084	<1	0	<1
tech-routers-rf	2,113	1,539	5,093	<b>97,799*</b>	1,668	<1	93,690	1,588	54	<b>97,799*</b>	1,668	11	<b>97,799*</b>	1,667	<1	0	<1
vc-exact.039	6,795	2,574	8,046	<b>259,542*</b>	5,018	<1	254,941	4,908	253	258,137	5,164	9	<b>259,542*</b>	5,018	<1	0	<1
ca-GirQc	4,158	3,179	10,243	<b>174,782*</b>	2,991	9	167,846	2,871	45	174,654	2,997	15	<b>174,782*</b>	2,994	11	282	<1
vc-exact.038	786	10,321	3,703	<b>12,015*</b>	208	589	10,406	168	1,994	12,014	208	12	<b>12,015*</b>	207	4	697	<1
vc-exact.078	11,349	4,289	13,450	<b>438,671*</b>	8,330	<1	431,371	8,128	1,074	435,412	8,671	<1	<b>438,671*</b>	8,330	<1	0	<1
vc-exact.087	13,590	5,126	16,114	<b>518,500*</b>	10,025	2	509,734	9,809	2,319	517,500	10,083	2	<b>518,500*</b>	10,026	<1	0	<1
vc-exact.107	6,402	15,646	5,594	<b>407,878*</b>	6,763	<1	396,456	6,488	10,646	400,223	6,846	1	<b>407,878*</b>	6,763	<1	0	<1
vc-exact.151	15,783	12,144	12,519	<b>530,138*</b>	9,526	2	516,445	9,135	2,402	522,462	9,764	1	<b>530,138*</b>	9,526	<1	0	<1
vc-exact.167	15,783	18,235	6,428	<b>465,178*</b>	7,797	1	449,579	7,438	10,469	457,272	7,923	2	<b>465,178*</b>	7,797	<1	0	<1
bio-dmela	7,393	18,897	6,672	<b>302,992*</b>	4,952	<1	280,897	4,474	170	302,449	4,959	10	<b>302,992*</b>	4,951	<1	44	<1
vc-exact.011	9,877	19,102	6,871	<b>303,793*</b>	5,369	1	286,137	4,950	4,818	301,789	5,487	7	<b>303,793*</b>	5,387	<1	172	<1
web-spam	4,767	8,089	28,386	<b>190,507*</b>	3,285	4.61	180,446	3,130	53	190,344	3,299	14	190,459	3,289	13	487	<1
vc-exact.026	6,140	27,159	9,608	<b>201,509*</b>	3,887	1	177,902	3,372	668	201,316	3,922	17	201,503	3,900	<1	300	<1
vc-exact.001	6,160	19,655	20,552	<b>215,941*</b>	4,129	2	194,984	3,709	9,575	215,668	4,175	13	<b>215,941*</b>	4,128	<1	134	<1
vc-exact.024	7,620	11,367	35,926	<b>236,109</b>	4,632	10,783	226,540	4,438	244	235,440	4,735	14	236,018	4,659	12	1,255	<1
C1000.9	1,000	11,999	37,432	5,263	99	10,800	6,104	116	430	7,229	126	12	<b>7,239</b>	125	10	1,000	<1
tech-WHOIS	7,476	42,181	14,762	<b>325,584*</b>	5,368	5	309,903	5,050	218	325,327	5,367	14	325,581	5,371	13	338	<1
p-hat700-3	700	30,398	31,242	4,025	68	10,800	3,030	52	7,436	<b>4,473</b>	78	<1	<b>4,473</b>	78	<1	700	<1
vc-exact.008	7,537	35,678	37,155	<b>247,091*</b>	4,800	3	210,126	4,089	9,093	246,771	4,839	14	<b>247,091*</b>	4,810	<1	574	<1
keller5	776	17,800	56,910	2,373	58	10,800	2,860	54	6,327	<b>3,877</b>	69	1	<b>3,877</b>	69	2	776	<1
vc-exact.194	1,150	39,520	41,331	3,734	77	10,708	4,386	73	1,324	<b>5,419</b>	86	<1	<b>5,419</b>	86	<1	1,150	<1
hamming10-4	1,024	66,369	23,231	3,256	52	8,108	3,073	45	2,069	<b>3,660</b>	54	<1	<b>3,660</b>	54	<1	1,024	<1
brock800.2	800	26,629	84,805	1,177	49	10,800	1,996	36	10	<b>2,473</b>	44	<1	<b>2,473</b>	43	<1	800	<1
brock800.4	800	26,831	85,126	1,583	48	10,800	1,979	39	7,215	<b>2,501</b>	43	<1	<b>2,501</b>	42	<1	800	<1
ca-HepPh	11,204	57,721	59,898	<b>372,096</b>	6,094	10,800	348,738	5,571	422	370,779	6,083	6	372,079	6,098	17	2,165	<1
p-hat700-2	700	90,788	32,134	2,870	41	10,140	2,345	37	2,078	<b>2,971</b>	42	<1	<b>2,971</b>	42	<1	700	<1
vc-exact.196	1,534	93,273	32,809	3,916	62	10,800	4,273	57	66	<b>5,321</b>	76	<1	<b>5,321</b>	76	<1	1,534	<1
p-hat700-1	700	135,804	47,847	730	11	10,800	<b>844*</b>	11	5	<b>844*</b>	11	<1	<b>844*</b>	11	<1	700	<1
ca-AstroPh	17,903	47,135	149,837	<b>604,288</b>	10,468	10,800	558,736	9,752	2,544	602,320	10,521	2	604,019	10,491	14	4,985	1
C2000.9	2,000	147,548	51,920	3,958	65	9,489	5,477	73	11	<b>6,396</b>	86	3	<b>6,396</b>	86	3	2,000	<1
DSJC1000.5	1,000	59,694	189,980	925	39	7,645	1,515	30	694	<b>1,861</b>	32	1	<b>1,861</b>	32	<1	1,000	<1
socfb-MIT	6,402	123,064	128,166	7,098	124	10,800	110,677	1,779	20	129,807	2,142	17	<b>129,917</b>	2,132	16	5,494	<1
p-hat1500-3	1,500	66,206	210,800	4,097	132	10,800	3,877	83	704	<b>7,501</b>	148	14	<b>7,501</b>	148	16	1,500	<1
socfb-UCSB37	14,917	356,918	125,297	16,708	287	10,800	219,965	3,286	256	254,965	4,013	16	<b>255,924</b>	3,994	22	13,655	3
socfb-Duke14	9,885	374,731	131,706	11,565	198	10,800	125,940	1,887	39	151,169	2,415	15	<b>151,365</b>	2,390	18	9,003	4
p-hat1500-2	1,500	411,372	143,918	3,542	53	10,800	2,611	43	2,150	<b>4,253</b>	68	<1	<b>4,253</b>	68	<1	1,500	<1
socfb-Stanford3	11,586	136,823	431,486	7,250	122	10,800	215,381	3,932	265	251,350	4,441	12	<b>251,932</b>	4,436	14	9,380	2
socfb-UConn	17,206	448,038	156,829	16,996	279	10,800	231,718	3,471	322	274,637	4,329	12	<b>275,320</b>	4,299	18	16,025	5
p-hat1500-1	1,500	411,744	427,583	0	0	10,800	1,184	18	5,499	<b>1,287</b>	19	<1	<b>1,287</b>	19	1	1,500	<1
C2000.5	2,000	489,894	509,270	0	0	10,800	1,581	24	865	<b>1,849</b>	26	2	<b>1,849</b>	26	6	2,000	1
keller6	3,361	759,816	266,766	0	0	10,800	3,545	55	1,561	<b>5,236</b>	73	10	<b>5,236</b>	73	16	3,361	<1
C4000.5	4,000	1,957,884	2,039,848	0	0	10,800	1,611	25	1,659	1,948	28	20	<b>1,952</b>	28	22	4,000	9
# of best / # of instances				24/47	—	—	1/47	—	—	18/47	—	—	41/47	—	—	—	—
average running time(s)				—	—	5,819.2	—	—	2,087.4	—	—	7.9	—	—	5.9	—	1.4

Table 3 Comparative results of RLS on SET-3 instances

Instance	V	E <sub>p</sub>	E <sub>r</sub>	CPLEX			LA-B&B			ALS			RLS				
				BKV	V <sub>f</sub>	htime(s)	BKV	V <sub>f</sub>	htime(s)	BKV	V <sub>f</sub>	htime(s)	BKV	V <sub>f</sub>	htime(s)	V <sub>set</sub>	time <sub>tot</sub> (s)
foodweb-wet	128	1,509	566	<b>2,464*</b>	44	<1	<b>2,464*</b>	44	8	<b>2,464*</b>	44	<1	<b>2,464*</b>	44	<1	125	<1
foodweb-dry	128	1,571	535	<b>2,226*</b>	42	<1	<b>2,226*</b>	42	8	<b>2,226*</b>	42	<1	<b>2,226*</b>	42	<1	125	<1
USAir97	332	1,589	537	<b>10,308*</b>	194	<1	9,507	178	407	<b>10,308*</b>	194	<1	<b>10,308*</b>	194	<1	0	<1
powergrid	4,941	1,727	4,867	<b>193,339*</b>	3,710	<1	190,537	3,684	108	193,095	3,754	59	<b>193,339*</b>	3,537	<1	0	<1
CondMat	23,133	46,769	46,670	<b>711,517*</b>	12,821	12	685,442	12,061	5,749	705,901	13,064	14	711,334	12,870	45	1,648	<1
Email	265,009	91,093	273,388	<b>13,054,427*</b>	257,435	118	OOM	—	—	OOM	—	—	<b>13,054,427*</b>	257,394	1	0	1
Epinion	75,879	202,653	203,087	<b>3,052,059*</b>	57,976	60	OOM	—	—	3,038,533	58,267	18	<b>3,052,059*</b>	58,008	1	253	1
Dblp	317,080	787,268	262,598	<b>9,737,911*</b>	171,421	790	OOM	—	—	OOM	—	—	9,734,653	171,403	64	11,851	11
cnr-2000	325,557	685,686	2,053,283	13,367,460	260,331	10,800	OOM	—	—	OOM	—	—	<b>13,368,670</b>	260,716	482	59,052	399
WikiTalk	2,394,385	3,494,873	1,164,692	<b>118,708,326*</b>	2,342,835	3,566	OOM	—	—	OOM	—	—	<b>118,708,326*</b>	2,342,861	333	8	333
BerkStan	685,230	1,662,833	4,986,637	<b>26,036,210</b>	501,197	10,800	OOM	—	—	OOM	—	—	26,031,704	501,410	1,112	114,191	1,031
As-Skitter	1,696,415	5,550,661	5,544,637	<b>66,603,360</b>	1,264,844	10,800	OOM	—	—	OOM	—	—	66,582,254	1,265,266	723	31,173	636
soc-pokec	1,632,803	11,152,945	11,149,019	4,146,172	84,217	10,800	OOM	—	—	OOM	—	—	<b>43,999,402</b>	833,989	934	881,319	134
Livcl	4,846,609	10,710,579	32,140,658	0	0	10,800	OOM	—	—	OOM	—	—	<b>168,431,056</b>	3,258,831	904	401,307	469
uk2002	18,483,186	65,451,024	196,336,234	0	0	100,000	OOM	—	—	OOM	—	—	<b>687,089,901</b>	13,716,043	7,678	4,806,660	6,243
# of best / # of instances				11/15	—	—	3/15	—	—	3/15	—	—	11/15	—	—	—	—
average running time(s)				—	—	10,570.1	—	—	1,256	—	—	15.7	—	—	818.7	—	617.5

**Table 4** Comparative results of algorithms with or without reduction rules

Instance	V	$ V_{ker} $	CPLEX				LA-B&B				RLS			
			without reduction		with reduction		without reduction		with reduction		without reduction		with reduction	
			BKV	htime(s)	BKV	htime(s)	BKV	htime(s)	BKV	htimes	BKV	htime(s)	BKV	htime(s)
bio-yeast	1,458	0	<b>68,574*</b>	<1	<b>68,574*</b>	<1	66,545	2	<b>68,574*</b>	<1	<b>68,574*</b>	1	<b>68,574*</b>	<1
soc-wiki-Vote	889	0	<b>37,358*</b>	<1	<b>37,358*</b>	<1	35,973	<1	<b>37,358*</b>	<1	<b>37,358*</b>	1	<b>37,358*</b>	<1
vc-exact.131	2,980	0	<b>109,641*</b>	<1	<b>109,641*</b>	<1	107,812	14	<b>109,641*</b>	<1	109,567	9	<b>109,641*</b>	<1
web-edu	3,031	98	<b>114,140*</b>	<1	<b>114,140*</b>	<1	109,856	10	<b>114,140*</b>	21	114,080	12	<b>114,140*</b>	<1
MANN_a81	3,321	0	<b>117,327*</b>	<1	<b>117,327*</b>	<1	114,616	16	<b>117,327*</b>	<1	117,275	14	<b>117,327*</b>	<1
tech-routers-rf	2,113	0	<b>97,799*</b>	<1	<b>97,799*</b>	<1	93,690	54	<b>97,799*</b>	<1	<b>97,799*</b>	1	<b>97,799*</b>	<1
vc-exact.039	6,795	0	<b>259,542*</b>	<1	<b>259,542*</b>	<1	254,941	253	<b>259,542*</b>	<1	259,475	13	<b>259,542*</b>	<1
ca-GrQc	4,158	282	<b>174,782*</b>	9	<b>174,782*</b>	6	167,846	45	174,525	2,998	174,768	7	<b>174,782*</b>	11
vc-exact.038	786	697	<b>12,015*</b>	589	<b>12,015*</b>	585	10,406	1,994	10,782	28	<b>12,015*</b>	13	<b>12,015*</b>	4
vc-exact.078	11,349	0	<b>438,671*</b>	<1	<b>438,671*</b>	1	431,371	1,074	<b>438,671*</b>	1	438,306	16	<b>438,671*</b>	<1
vc-exact.087	13,590	0	<b>518,500*</b>	2	<b>518,500*</b>	<1	509,734	2,319	<b>518,500*</b>	<1	518,069	15	<b>518,500*</b>	<1
vc-exact.107	6,402	0	<b>407,878*</b>	<1	<b>407,878*</b>	<1	396,456	10,646	<b>407,878*</b>	<1	406,379	14	<b>407,878*</b>	<1
vc-exact.151	15,783	0	<b>530,138*</b>	2	<b>530,138*</b>	<1	516,445	2,402	<b>530,138*</b>	<1	529,003	18	<b>530,138*</b>	<1
vc-exact.167	15,783	0	<b>465,178*</b>	1	<b>465,178*</b>	<1	449,579	10,469	<b>465,178*</b>	<1	463,446	12	<b>465,178*</b>	<1
bio-dmela	7,393	44	<b>302,992*</b>	<1	<b>302,992*</b>	<1	280,897	170	<b>302,992*</b>	<1	302,793	18	<b>302,992*</b>	<1
vc-exact.011	9,877	172	<b>303,793*</b>	1	<b>303,793*</b>	<1	286,137	4,818	303,589	1271	303,352	9	<b>303,793*</b>	<1
web-spam	4,767	487	<b>190,507*</b>	4.61	<b>190,507*</b>	<1	180,446	53	189,897	<1	190,460	18	190,460	13
vc-exact.026	6,140	300	<b>201,509*</b>	1	<b>201,509*</b>	<1	177,902	668	200,868	<1	201,458	13	201,503	<1
vc-exact.001	6,160	134	<b>215,941*</b>	2	<b>215,941*</b>	<1	194,984	9,575	<b>215,941*</b>	2	215,934	13	<b>215,941*</b>	<1
vc-exact.024	7,620	1,255	<b>236,109</b>	10,783	<b>236,109</b>	10,800	226,540	244	234,933	1	235,911	14	236,018	12
C1000.9	1,000	1,000	5,263	10,800	5,263	10,800	6,104	430	6,104	430	7,235	16	<b>7,237</b>	10
tech-WHOIS	7,476	338	<b>325,584*</b>	5	<b>325,584*</b>	<1	309,903	218	325,119	255	325,480	16	325,581	13
p-hat700-3	700	700	4,025	10,800	4,025	10,800	3,030	7,436	3,030	7,436	<b>4,473</b>	1	<b>4,473</b>	<1
vc-exact.008	7,537	574	<b>247,091*</b>	3	<b>247,091*</b>	<1	210,126	9,093	245,289	6,627	247,036	16	<b>247,091*</b>	<1
keller5	776	776	2,373	10,800	2,373	10,800	2,860	6,327	2,860	6,327	<b>3,877</b>	2	<b>3,877</b>	2
vc-exact.194	1,150	1,150	3,734	10,708	3,734	10,800	4,386	1,324	4,386	1,324	<b>5,419</b>	2	<b>5,419</b>	<1
hamming10-4	1,024	1,024	3,256	8,108	3,256	10,800	3,073	2,069	3,073	2,069	<b>3,660</b>	1	<b>3,660</b>	<1
brock800.2	800	800	1,177	10,800	1,177	10,800	1,996	10	1,996	10	<b>2,473</b>	1	<b>2,473</b>	<1
brock800.4	800	800	1,583	10,800	1,583	10,800	1,979	7,215	1,979	7,215	<b>2,501</b>	1	<b>2,501</b>	<1
ca-HepPh	11,204	2,165	372,096	10,800	<b>372,229</b>	10,800	348,738	422	368,637	2	372,079	14	372,079	17
p-hat700-2	700	700	2,870	10,140	2,870	10,140	2,345	2,078	2,345	2,078	<b>2,971</b>	1	<b>2,971</b>	<1
vc-exact.196	1,534	1,534	3,916	10,800	3,916	10,800	4,273	66	4,273	66	<b>5,321</b>	2	<b>5,321</b>	<1
p-hat700-1	700	700	730	10,800	730	10,800	<b>844*</b>	5	<b>844*</b>	5	<b>844*</b>	1	<b>844*</b>	<1
ca-AstroPh	17,903	4,985	604,288	10,800	<b>604,342</b>	10,800	558,736	2,544	593,899	37	603,732	15	603,945	14
C2000.9	2,000	2,000	3,958	9,489	3,958	10,800	5,477	11	5,477	11	<b>6,396</b>	3	<b>6,396</b>	3
DSJC1000.5	1,000	1,000	925	7,645	925	10,800	1,515	694	1,515	694	<b>1,861</b>	1	<b>1,861</b>	<1
socfb-MIT	6,402	5,494	7,098	10,800	118,114	10,800	110,677	20	113,623	10	129,831	16	<b>129,872</b>	16
p-hat1500-3	1,500	1,500	4,097	10,800	4,097	10,800	3,877	704	3,877	704	7,500	15	<b>7,501</b>	16
socfb-UCSB37	14,917	13,655	16,708	10,800	57,084	10,800	219,965	256	223,780	150	255,887	21	<b>255,898</b>	22
socfb-Duke14	9,885	9,003	11,565	10,800	127,145	10,800	125,940	39	127,269	2,231	151,321	14	<b>151,326</b>	18
p-hat1500-2	1,500	1,500	3,542	10,800	3,542	10,800	2,611	2,150	2,611	2,150	<b>4,253</b>	1	<b>4,253</b>	<1
socfb-Stanford3	11,586	9,380	7,250	10,800	127,708	10,800	215,381	265	223,398	7,756	251,788	19	<b>251,833</b>	14
socfb-UConn	17,206	16,025	16,996	10,800	51,328	10,800	231,718	322	235,104	240	275,006	16	<b>275,034</b>	20
p-hat1500-1	1,500	1,500	0	10,800	0	10,800	1,184	5,499	1,184	5,499	<b>1,287</b>	2	<b>1,287</b>	1
C2000.5	2,000	2,000	0	10,800	0	10,800	1,581	865	1,581	865	<b>1,849</b>	5	<b>1,849</b>	6
keller6	3,361	3,361	0	10,800	0	10,800	3,545	1,561	3,545	1,561	5,229	19	<b>5,236</b>	16
C4000.5	4,000	4,000	0	10,800	0	10,800	1,611	1,659	1,611	1,659	<b>1,951</b>	15	<b>1,951</b>	22
foodweb-wet	128	125	<b>2,464*</b>	<1	<b>2,464*</b>	<1	<b>2,464*</b>	8	<b>2,464*</b>	6	<b>2,464*</b>	<1	<b>2,464*</b>	<1
foodweb-dry	128	125	<b>2,226*</b>	<1	<b>2,226*</b>	<1	<b>2,226*</b>	8	<b>2,226*</b>	8	<b>2,226*</b>	<1	<b>2,226*</b>	<1
USAir97	332	0	<b>10,308*</b>	<1	<b>10,308*</b>	<1	9,507	407	<b>10,308*</b>	<1	<b>10,308*</b>	<1	<b>10,308*</b>	<1
powergrid	4,941	0	<b>193,339*</b>	<1	<b>193,339*</b>	<1	190,537	108	<b>193,339*</b>	<1	193,194	52	<b>193,339*</b>	<1
CondMat	23,133	1,648	<b>711,517*</b>	12	<b>711,517*</b>	<1	685,442	5,749	708,907	84	709,927	54	711,334	45
Email	265,009	0	<b>13,054,427*</b>	118	<b>13,054,427*</b>	1	OOM	–	<b>13,054,427*</b>	1	13,054,390	69	<b>13,054,427*</b>	1
Epinion	75,879	253	<b>3,052,059*</b>	60	<b>3,052,059*</b>	1	OOM	–	3,051,256	196	3,050,415	67	<b>3,052,059*</b>	1
Dblp	317,080	11,851	<b>9,737,911*</b>	790	<b>9,737,911*</b>	39	OOM	–	9,715,860	307	9,577,609	46	9,734,653	64
cnr-2000	325,557	59,052	13,367,460	10,800	<b>13,641,278</b>	10,800	OOM	–	11,347,241	10,796	13,361,167	84	13,368,670	482
WikiTalk	2,394,385	8	<b>118,708,326*</b>	3,566	<b>118,708,326*</b>	333	OOM	–	<b>118,708,326*</b>	333	118,672,055	56	<b>118,708,326*</b>	333
BerkStan	685,230	114,191	26,036,210	10,800	<b>26,055,767</b>	10,800	OOM	–	22,591,394	1,031	25,813,846	200	26,031,704	1,112
As-Skitter	1,696,415	31,173	66,603,360	10,800	<b>66,830,857</b>	10,800	OOM	–	65,907,243	10,512	59,886,304	200	66,582,254	723
soc-pokec	1,632,803	881,319	4,146,172	10,800	27,037,851	10,800	OOM	–	OOM	–	36,540,838	350	<b>43,999,402</b>	934
LiveJ	4,846,609	401,307	0	10,800	163,061,840	10,800	OOM	–	OOM	–	148,758,359	318	<b>168,431,056</b>	904
uk2002	18,483,186	4,806,660	0	100,000	567,666,923	100,000	OOM	–	OOM	–	633,365,020	1,806	<b>687,089,901</b>	7,678
# of best / # of instances			31/62	–	36/62	–	3/62	–	21/62	–	22/62	–	51/62	–
average running time(s)			–	7,096.5	–	6,901.0	–	2,007.5	–	1,441.1	–	<b>60.8</b>	–	202.6