Libpll sequential benchmarks

January 25, 2017

- node : node index (post order traversal)
- psize: number of unique (not repeating) sites on the current node
- lsize: number of unique (not repeating) sites on the left child node
- rsize: number of unique (not repeating) sites on the right child node
- ullet repeats: runtime for 500 update partials on the node
- $\bullet\,$ TCLV opt : runtime for 500 update partials on the node with left and right TCLV
- SR opt : bclv si repeats qqpart, gros if dans la boucle
- SR opt2 : bclv si repeats qqpart, boucle qui gere aussi les non repeats
- $\bullet\,$ SR opt3 : tip pattern, b
clv si repeats q
qpart, boucle qui gere aussi les non repeats
- SR opt4; bclv si repeats qqpart, gros if dans la boucle, prebuffer, unroll

1 dataset 404 hits avx

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2	SR opt3	SR opt4
node0	25	5	5	77ms	8ms	10ms	$79 \mathrm{ms}$	8ms
node1	68	5	25	67ms	9ms	10ms	$70 \mathrm{ms}$	9ms
node2	24	6	5	74ms	6ms	7ms	$72 \mathrm{ms}$	6ms
node3	225	68	24	110ms	14ms	15ms	$106 \mathrm{ms}$	14ms
node4	403	5	225	67ms	18ms	20ms	$70 \mathrm{ms}$	19ms
node5	508	5	403	$66 \mathrm{ms}$	21ms	24ms	$70 \mathrm{ms}$	$23 \mathrm{ms}$
node6	24	5	5	73ms	6ms	6ms	$72 \mathrm{ms}$	6ms
node7	24	5	5	77ms	6ms	7ms	$76 \mathrm{ms}$	$7 \mathrm{ms}$
node8	148	24	24	111ms	11ms	12ms	$105 \mathrm{ms}$	12ms
node9	25	5	5	79ms	6ms	7ms	$75 \mathrm{ms}$	$7 \mathrm{ms}$
node10	23	5	5	73ms	6ms	6ms	$72 \mathrm{ms}$	6ms
node11	178	25	23	108ms	12ms	13ms	$106 \mathrm{ms}$	13ms
node12	268	5	178	$65 \mathrm{ms}$	$15 \mathrm{ms}$	17ms	$71 \mathrm{ms}$	15ms
node13	22	5	5	76ms	6ms	6ms	$76 \mathrm{ms}$	6ms
node14	25	5	5	74ms	6ms	6ms	$73 \mathrm{ms}$	$7 \mathrm{ms}$
node15	115	22	25	107ms	$10 \mathrm{ms}$	11ms	$108 \mathrm{ms}$	10ms
node16	628	268	115	108ms	29ms	$33 \mathrm{ms}$	$108 \mathrm{ms}$	31ms
node17	919	148	628	110ms	43ms	$53 \mathrm{ms}$	$107 \mathrm{ms}$	$50 \mathrm{ms}$
node18	1428	508	919	124ms	$67 \mathrm{ms}$	83ms	$106 \mathrm{ms}$	79ms
node19	25	5	5	87ms	$6 \mathrm{ms}$	$7 \mathrm{ms}$	$75 \mathrm{ms}$	6ms

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2	SR opt3	SR opt4
node20	72	5	25	$78 \mathrm{ms}$	8ms	9ms	$70 \mathrm{ms}$	8ms
node21	1597	1428	72	$135 \mathrm{ms}$	58ms	68ms	106ms	$63 \mathrm{ms}$
node22	25	5	5	$75 \mathrm{ms}$	6ms	$7 \mathrm{ms}$	$73 \mathrm{ms}$	6ms
node23	25	5	5	83ms	6ms	6ms	$75 \mathrm{ms}$	6ms
node24	90	5	25	$75 \mathrm{ms}$	9ms	10ms	71ms	$9 \mathrm{ms}$
node25	211	5	90	74ms	$13 \mathrm{ms}$	14ms	$70 \mathrm{ms}$	$13 \mathrm{ms}$
node26	339	5	211	73ms	$17 \mathrm{ms}$	19ms	$70 \mathrm{ms}$	$17 \mathrm{ms}$
node27	24	5	5	$76 \mathrm{ms}$	6ms	6ms	$76 \mathrm{ms}$	6ms
node28	62	5	24	72ms	8ms	8ms	$70 \mathrm{ms}$	8ms
node29	109	62	5	67ms	9ms	10ms	$70 \mathrm{ms}$	9ms
node30	681	339	109	129ms	$31 \mathrm{ms}$	$36 \mathrm{ms}$	$107 \mathrm{ms}$	$34 \mathrm{ms}$
node31	896	25	681	139ms	38ms	$45 \mathrm{ms}$	108ms	42ms
node32	932	896	5	73ms	$35 \mathrm{ms}$	38ms	71ms	$35 \mathrm{ms}$
node33	1022	5	932	77ms	40ms	43ms	71ms	$40 \mathrm{ms}$
node34	30	5	10	84ms	7ms	7ms	$73 \mathrm{ms}$	$7 \mathrm{ms}$
node35	1267	1022	30	134ms	51ms	58ms	107ms	54ms
node36	1329	1267	5	$75 \mathrm{ms}$	$50 \mathrm{ms}$	$56 \mathrm{ms}$	$70 \mathrm{ms}$	$51 \mathrm{ms}$
node37	25	5	5	$75 \mathrm{ms}$	6ms	6ms	$75 \mathrm{ms}$	6ms
node38	92	25	5	$68 \mathrm{ms}$	9ms	$10 \mathrm{ms}$	$70 \mathrm{ms}$	9ms
node39	188	92	5	71ms	12ms	13ms	$70 \mathrm{ms}$	$13 \mathrm{ms}$

2

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2	SR opt3	SR opt4
node40	30	8	5	$73 \mathrm{ms}$	6ms	$7 \mathrm{ms}$	$73 \mathrm{ms}$	7ms
node41	20	5	5	$75 \mathrm{ms}$	6ms	6ms	$77 \mathrm{ms}$	6ms
node42	25	5	5	74ms	6ms	6ms	$72 \mathrm{ms}$	7ms
node43	124	20	25	112ms	$10 \mathrm{ms}$	11ms	$107 \mathrm{ms}$	11ms
node44	158	5	124	$67 \mathrm{ms}$	11ms	12ms	$71 \mathrm{ms}$	12ms
node45	373	30	158	122ms	$19 \mathrm{ms}$	21ms	$105 \mathrm{ms}$	20ms
node46	913	188	373	119ms	42ms	49ms	$105 \mathrm{ms}$	48ms
node47	2118	1329	913	110ms	$95 \mathrm{ms}$	115ms	$106 \mathrm{ms}$	111ms
node48	3230	1597	2118	111ms	114ms	117ms	109ms	112ms
node49	22	5	5	83ms	6ms	6ms	$77 \mathrm{ms}$	7ms
node50	3230	3230	22	115ms	$83 \mathrm{ms}$	87ms	108ms	78ms
node51	3230	5	3230	67ms	$71 \mathrm{ms}$	75ms	$72 \mathrm{ms}$	$63 \mathrm{ms}$
node52	32	12	5	72ms	7ms	7ms	$73 \mathrm{ms}$	7ms
node53	3230	3230	32	112ms	76ms	79ms	109ms	68ms
node54	3230	5	3230	$68 \mathrm{ms}$	71ms	74ms	$72 \mathrm{ms}$	63ms
node55	23	5	5	$76 \mathrm{ms}$	6ms	6ms	$78 \mathrm{ms}$	6ms
node56	62	23	6	$65 \mathrm{ms}$	$7 \mathrm{ms}$	8ms	$72 \mathrm{ms}$	$7 \mathrm{ms}$

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node0	24	5	6	125ms	14ms	14ms
node1	21	5	7	125ms	14ms	14ms
node2	28	5	21	149ms	14ms	14ms
node3	65	28	8	149ms	$16 \mathrm{ms}$	15ms
node4	98	65	7	149ms	18ms	17ms
node5	17	6	5	$125 \mathrm{ms}$	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node6	18	5	17	149ms	14ms	14ms
node7	23	5	18	149ms	14ms	14ms
node8	13	5	5	160ms	$13 \mathrm{ms}$	13ms
node9	11	5	5	$159 \mathrm{ms}$	$13 \mathrm{ms}$	13ms
node10	20	5	11	149ms	14ms	13ms
node11	38	13	20	259ms	$15 \mathrm{ms}$	$15 \mathrm{ms}$
node12	51	5	38	149ms	$16 \mathrm{ms}$	$15 \mathrm{ms}$
node13	83	23	51	252ms	$17 \mathrm{ms}$	$17 \mathrm{ms}$
node14	194	98	83	256ms	$23 \mathrm{ms}$	$23 \mathrm{ms}$
node15	246	24	194	$257 \mathrm{ms}$	$26 \mathrm{ms}$	24ms
node16	267	6	246	148ms	26ms	$23 \mathrm{ms}$
node17	273	6	267	151ms	26ms	24ms
node18	273	5	273	149ms	$26 \mathrm{ms}$	$23 \mathrm{ms}$
node19	22	5	5	160ms	14ms	14ms

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node20	23	5	5	$159 \mathrm{ms}$	14ms	14ms
node21	25	5	5	160ms	14ms	14ms
node22	120	23	25	$253 \mathrm{ms}$	$20 \mathrm{ms}$	19ms
node23	272	22	120	254ms	28ms	26ms
node24	341	5	272	150ms	$31 \mathrm{ms}$	$27 \mathrm{ms}$
node25	22	5	5	159ms	14ms	14ms
node26	63	5	22	149ms	$16 \mathrm{ms}$	16ms
node27	76	5	63	151ms	$17 \mathrm{ms}$	16ms
node28	17	6	5	159ms	14ms	14ms
node29	37	5	17	149ms	$15 \mathrm{ms}$	14ms
node30	24	5	6	159ms	14ms	14ms
node31	35	24	5	151ms	$15 \mathrm{ms}$	14ms
node32	131	37	35	255ms	$20 \mathrm{ms}$	19ms
node33	23	6	5	159ms	14ms	14ms
node34	43	6	23	151ms	$15 \mathrm{ms}$	15ms
node35	55	5	43	149ms	$16 \mathrm{ms}$	$15 \mathrm{ms}$
node36	16	5	5	159ms	14ms	13ms
node37	29	16	5	149ms	14ms	14ms
node38	111	55	29	$253 \mathrm{ms}$	19ms	19ms
node39	120	5	111	148ms	21ms	18ms

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node40	281	131	120	$253 \mathrm{ms}$	$29 \mathrm{ms}$	$29 \mathrm{ms}$
node41	421	76	281	$256 \mathrm{ms}$	$36 \mathrm{ms}$	34ms
node42	927	341	421	$258 \mathrm{ms}$	$65 \mathrm{ms}$	64ms
node43	21	6	5	$159 \mathrm{ms}$	14ms	14ms
node44	46	5	21	148ms	$15 \mathrm{ms}$	15ms
node45	17	5	5	$159 \mathrm{ms}$	14ms	13ms
node46	10	5	5	$162 \mathrm{ms}$	$13 \mathrm{ms}$	13ms
node47	25	5	5	$163 \mathrm{ms}$	14ms	13ms
node48	69	5	25	222ms	$16 \mathrm{ms}$	15ms
node49	179	10	69	$367 \mathrm{ms}$	22ms	20ms
node50	185	5	179	181ms	22ms	20ms
node51	215	17	185	$255 \mathrm{ms}$	24ms	22ms
node52	25	5	5	$159 \mathrm{ms}$	14ms	13ms
node53	466	215	25	$254 \mathrm{ms}$	$36 \mathrm{ms}$	31ms
node54	704	46	466	$255 \mathrm{ms}$	51ms	47ms
node55	796	6	704	149ms	$53 \mathrm{ms}$	45ms
node56	25	5	5	$159 \mathrm{ms}$	14ms	14ms
node57	22	5	5	$159 \mathrm{ms}$	14ms	14ms
node58	57	5	22	149ms	16ms	15ms
node59	14	6	5	$159 \mathrm{ms}$	$13 \mathrm{ms}$	13ms

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node60	23	5	5	159ms	14ms	14ms
node61	69	14	23	$253 \mathrm{ms}$	17ms	16ms
node62	9	5	5	$159 \mathrm{ms}$	$13 \mathrm{ms}$	13ms
node63	35	5	9	149ms	14ms	14ms
node64	87	5	35	149ms	$17 \mathrm{ms}$	16ms
node65	212	69	87	256ms	$25 \mathrm{ms}$	23ms
node66	228	5	212	183ms	24ms	22ms
node67	29	9	5	163ms	14ms	14ms
node68	19	5	5	163ms	14ms	14ms
node69	106	29	19	$358 \mathrm{ms}$	18ms	18ms
node70	15	5	5	163ms	$13 \mathrm{ms}$	13ms
node71	146	106	15	$357 \mathrm{ms}$	21ms	$19 \mathrm{ms}$
node72	434	228	146	339ms	$36 \mathrm{ms}$	$34 \mathrm{ms}$
node73	449	5	434	149ms	34ms	$30 \mathrm{ms}$
node74	522	57	449	257ms	41ms	$39 \mathrm{ms}$
node75	555	5	522	149ms	$39 \mathrm{ms}$	34ms
node76	638	5	555	149ms	44ms	$37 \mathrm{ms}$
node77	24	5	5	160ms	14ms	14ms
node78	23	5	5	$159 \mathrm{ms}$	14ms	14ms
node79	60	5	23	148ms	16ms	$15 \mathrm{ms}$

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node80	212	24	60	$257 \mathrm{ms}$	25ms	23ms
node81	17	6	5	$159 \mathrm{ms}$	14ms	14ms
node82	33	5	17	148ms	15ms	14ms
node83	24	5	5	$159 \mathrm{ms}$	14ms	14ms
node84	17	5	5	159ms	$13 \mathrm{ms}$	13ms
node85	27	17	5	149ms	14ms	14ms
node86	40	5	27	152ms	$15 \mathrm{ms}$	14ms
node87	56	40	5	222ms	16ms	$15 \mathrm{ms}$
node88	20	5	5	163ms	14ms	14ms
node89	82	56	20	$360 \mathrm{ms}$	$17 \mathrm{ms}$	16ms
node90	8	5	5	162ms	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node91	18	5	5	163ms	$13 \mathrm{ms}$	13ms
node92	37	8	18	$356 \mathrm{ms}$	$15 \mathrm{ms}$	14ms
node93	13	5	5	163ms	$13 \mathrm{ms}$	13ms
node94	16	5	5	162ms	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node95	9	5	5	162ms	14ms	13ms
node96	38	16	9	$259 \mathrm{ms}$	15ms	14ms
node97	54	5	38	149ms	16ms	$15 \mathrm{ms}$
node98	73	5	54	149ms	16ms	16ms
node99	96	13	73	255ms	18ms	$17 \mathrm{ms}$

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node100	145	37	96	$253 \mathrm{ms}$	21ms	21ms
node101	220	82	145	$255 \mathrm{ms}$	24ms	24ms
node102	331	24	220	$254 \mathrm{ms}$	$29 \mathrm{ms}$	27ms
node103	19	5	5	$159 \mathrm{ms}$	$14 \mathrm{ms}$	13ms
node104	17	5	5	$159 \mathrm{ms}$	$14 \mathrm{ms}$	$13 \mathrm{ms}$
node105	22	5	5	$159 \mathrm{ms}$	$14 \mathrm{ms}$	14ms
node106	14	5	5	162ms	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node107	33	5	14	222ms	$15 \mathrm{ms}$	14ms
node108	46	5	33	223ms	$15 \mathrm{ms}$	$15 \mathrm{ms}$
node109	12	5	5	163ms	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node110	15	5	5	163ms	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node111	46	15	5	222ms	$15 \mathrm{ms}$	$15 \mathrm{ms}$
node112	62	12	46	$352 \mathrm{ms}$	$16 \mathrm{ms}$	16ms
node113	108	46	62	256ms	$18 \mathrm{ms}$	$19 \mathrm{ms}$
node114	146	5	108	149ms	$20 \mathrm{ms}$	$19 \mathrm{ms}$
node115	149	5	146	149ms	$20 \mathrm{ms}$	19ms
node116	189	5	149	149ms	22ms	20ms
node117	20	5	5	$159 \mathrm{ms}$	14ms	$13 \mathrm{ms}$
node118	256	189	20	258ms	26ms	$23 \mathrm{ms}$
node119	336	22	256	$255 \mathrm{ms}$	31ms	29ms

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node120	344	5	336	149ms	$30 \mathrm{ms}$	26ms
node121	372	17	344	258ms	$33 \mathrm{ms}$	$30 \mathrm{ms}$
node122	15	5	5	159ms	$13 \mathrm{ms}$	13ms
node123	20	5	15	149ms	14ms	14ms
node124	18	5	5	159ms	14ms	14ms
node125	49	20	18	252ms	$15 \mathrm{ms}$	15ms
node126	66	5	49	148ms	$17 \mathrm{ms}$	16ms
node127	480	372	66	255ms	$38 \mathrm{ms}$	$33 \mathrm{ms}$
node128	535	19	480	255ms	41ms	$38 \mathrm{ms}$
node129	948	331	535	261ms	61ms	62ms
node130	1004	33	948	261ms	$65 \mathrm{ms}$	$60 \mathrm{ms}$
node131	1041	5	1004	149ms	61ms	51ms
node132	1379	212	1041	258ms	92ms	89ms
node133	24	5	5	159ms	14ms	14ms
node134	50	5	24	149ms	$15 \mathrm{ms}$	15ms
node135	70	5	50	149ms	16ms	15ms
node136	16	5	5	$159 \mathrm{ms}$	14ms	$13 \mathrm{ms}$
node137	13	5	5	$159 \mathrm{ms}$	13ms	$13 \mathrm{ms}$
node138	39	16	13	$255 \mathrm{ms}$	15ms	$15 \mathrm{ms}$
node139	56	39	5	149ms	16ms	15ms

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node140	159	70	56	$259 \mathrm{ms}$	21ms	20ms
node141	24	5	5	$159 \mathrm{ms}$	14ms	$13 \mathrm{ms}$
node142	250	159	24	256ms	$25 \mathrm{ms}$	$23 \mathrm{ms}$
node143	1768	1379	250	$254 \mathrm{ms}$	110ms	94ms
node144	1774	5	1768	149ms	$103 \mathrm{ms}$	84ms
node145	1863	5	1774	151ms	109ms	$89 \mathrm{ms}$
node146	2448	638	1863	$359 \mathrm{ms}$	$165 \mathrm{ms}$	$165 \mathrm{ms}$
node147	21	8	5	163ms	14ms	14ms
node148	43	21	6	223ms	$15 \mathrm{ms}$	14ms
node149	82	43	5	222ms	$17 \mathrm{ms}$	16ms
node150	2574	2448	82	$358 \mathrm{ms}$	$155 \mathrm{ms}$	125ms
node151	21	5	5	163ms	14ms	13ms
node152	62	21	5	222ms	16ms	15ms
node153	125	5	62	186ms	19ms	18ms
node154	226	5	125	149ms	24ms	22ms
node155	25	5	5	159ms	14ms	14ms
node156	14	5	5	$159 \mathrm{ms}$	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node157	58	25	14	252ms	$16 \mathrm{ms}$	16ms
node158	26	6	5	159ms	14ms	14ms
node159	25	11	5	159ms	14ms	14ms

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node160	25	5	5	$159 \mathrm{ms}$	14ms	14ms
node161	24	5	5	$159 \mathrm{ms}$	14ms	14ms
node162	24	5	5	161ms	14ms	14ms
node163	40	5	24	149ms	$15 \mathrm{ms}$	15ms
node164	101	40	5	149ms	18ms	$17 \mathrm{ms}$
node165	189	6	101	149ms	$23 \mathrm{ms}$	22ms
node166	23	5	5	160ms	14ms	14ms
node167	64	23	5	222ms	$17 \mathrm{ms}$	16ms
node168	364	189	64	358ms	$33 \mathrm{ms}$	$30 \mathrm{ms}$
node169	399	364	5	222ms	$33 \mathrm{ms}$	$29 \mathrm{ms}$
node170	431	5	399	223ms	$35 \mathrm{ms}$	$30 \mathrm{ms}$
node171	524	24	431	362ms	$42 \mathrm{ms}$	$38 \mathrm{ms}$
node172	560	5	524	223ms	41ms	$35 \mathrm{ms}$
node173	675	25	560	$362 \mathrm{ms}$	$49 \mathrm{ms}$	44ms
node174	729	25	675	$358 \mathrm{ms}$	$52 \mathrm{ms}$	48ms
node175	740	5	729	222ms	51ms	42ms
node176	25	5	5	163ms	14ms	14ms
node177	68	25	5	178ms	$17 \mathrm{ms}$	16ms
node178	24	5	5	159ms	14ms	14ms
node179	54	24	5	149ms	16ms	$15 \mathrm{ms}$

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node180	236	68	54	256ms	$26 \mathrm{ms}$	25ms
node181	1009	740	236	254ms	$68 \mathrm{ms}$	$63 \mathrm{ms}$
node182	1021	1009	5	149ms	$64 \mathrm{ms}$	51ms
node183	25	5	5	161ms	14ms	14ms
node184	82	25	5	222ms	$16 \mathrm{ms}$	16ms
node185	1197	1021	82	361ms	$76 \mathrm{ms}$	$67 \mathrm{ms}$
node186	1240	26	1197	$359 \mathrm{ms}$	$82 \mathrm{ms}$	$73 \mathrm{ms}$
node187	1279	5	1240	222ms	$78 \mathrm{ms}$	64ms
node188	1295	1279	5	223ms	$78 \mathrm{ms}$	$63 \mathrm{ms}$
node189	1334	8	1295	222ms	$87 \mathrm{ms}$	$70 \mathrm{ms}$
node190	1389	5	1334	222ms	$86 \mathrm{ms}$	$69 \mathrm{ms}$
node191	27	5	8	163ms	$14 \mathrm{ms}$	14ms
node192	22	5	5	163ms	$14 \mathrm{ms}$	14ms
node193	27	5	9	163ms	$14 \mathrm{ms}$	14ms
node194	58	6	27	223ms	$16 \mathrm{ms}$	16ms
node195	104	6	58	222ms	$19 \mathrm{ms}$	$17 \mathrm{ms}$
node196	23	5	6	160ms	14ms	14ms
node197	39	5	23	149ms	15ms	14ms
node198	59	7	39	149ms	16ms	16ms
node199	88	59	5	149ms	18ms	$17 \mathrm{ms}$

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node200	25	5	6	159ms	14ms	14ms
node201	65	25	5	149ms	$16 \mathrm{ms}$	$15 \mathrm{ms}$
node202	250	88	65	$255 \mathrm{ms}$	$26 \mathrm{ms}$	24ms
node203	29	11	6	159ms	$14 \mathrm{ms}$	14ms
node204	65	6	29	149ms	$17 \mathrm{ms}$	$17 \mathrm{ms}$
node205	386	250	65	$255 \mathrm{ms}$	$33 \mathrm{ms}$	$29 \mathrm{ms}$
node206	417	5	386	149ms	$32 \mathrm{ms}$	$27 \mathrm{ms}$
node207	538	104	417	254ms	$43 \mathrm{ms}$	$38 \mathrm{ms}$
node208	584	22	538	256ms	$44 \mathrm{ms}$	$38 \mathrm{ms}$
node209	645	27	584	256ms	$48 \mathrm{ms}$	40ms
node210	28	5	9	159ms	14ms	14ms
node211	34	12	6	159ms	14ms	14ms
node212	182	28	34	260ms	$23 \mathrm{ms}$	21ms
node213	29	10	5	159ms	14ms	14ms
node214	59	6	29	149ms	$16 \mathrm{ms}$	15ms
node215	93	59	6	149ms	18ms	17ms
node216	151	7	93	148ms	21ms	19ms
node217	169	5	151	149ms	22ms	$20 \mathrm{ms}$
node218	23	5	5	159ms	14ms	14ms
node219	46	6	23	149ms	$15 \mathrm{ms}$	15ms

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node220	29	8	6	$159 \mathrm{ms}$	14ms	14ms
node221	90	5	29	149ms	$17 \mathrm{ms}$	$17 \mathrm{ms}$
node222	245	46	90	$255 \mathrm{ms}$	$27 \mathrm{ms}$	$25 \mathrm{ms}$
node223	17	5	5	159ms	14ms	13ms
node224	56	5	17	154ms	$16 \mathrm{ms}$	$15 \mathrm{ms}$
node225	28	5	8	$163 \mathrm{ms}$	14ms	14ms
node226	97	28	12	223ms	18ms	17ms
node227	297	56	97	$363 \mathrm{ms}$	$29 \mathrm{ms}$	$26 \mathrm{ms}$
node228	328	5	297	207ms	$29 \mathrm{ms}$	26ms
node229	663	245	328	$254 \mathrm{ms}$	$52 \mathrm{ms}$	49ms
node230	686	5	663	148ms	48ms	40ms
node231	877	169	686	$259 \mathrm{ms}$	$67 \mathrm{ms}$	$59 \mathrm{ms}$
node232	882	5	877	148ms	$57 \mathrm{ms}$	$46 \mathrm{ms}$
node233	1258	182	882	$255 \mathrm{ms}$	$96 \mathrm{ms}$	83ms
node234	1267	5	1258	149ms	$79 \mathrm{ms}$	$64 \mathrm{ms}$
node235	1744	645	1267	$255 \mathrm{ms}$	$129 \mathrm{ms}$	117ms
node236	7429	1389	1744	$257 \mathrm{ms}$	277ms	216ms
node237	7429	5	7429	151ms	$248 \mathrm{ms}$	$164 \mathrm{ms}$
node238	7429	58	7429	$256 \mathrm{ms}$	$254 \mathrm{ms}$	$175 \mathrm{ms}$
node239	7429	226	7429	259ms	$258 \mathrm{ms}$	177ms
node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node240	7429	5	7429	$150 \mathrm{ms}$	243ms	166ms
node240	25	5	5	159ms	14ms	14ms
node241	37	5	25	148ms	15ms	14ms
node242	17	5	5	159ms	14ms	14ms
node244	71	37	17	355ms	17ms	17ms
node245	139	5	71	223ms	20ms	19ms
node246	7429	7429	139	364ms	258ms	176ms
node247	7429	2574	7429	367ms	$263 \mathrm{ms}$	216ms
node248	25	5	5	163ms	14ms	14ms
node249	83	25	5	222ms	17ms	16ms
node250	25	5	5	163ms	14ms	14ms
node250	264	83	25	362ms	26ms	23ms
node252	7429	7429	264	364ms	269ms	178ms
node253	7429	25	7429	285ms	274ms	174ms
node254	24	5	5	159ms	15ms	14ms
		9		1001110	101110	1 11111
node255	41	8	12	$159 \mathrm{ms}$	$16 \mathrm{ms}$	14ms

9

5

5

6

5

 $159 \mathrm{ms}$

160ms

 $149 \mathrm{ms}$

 $150 \mathrm{ms}$

 $15 \mathrm{ms}$

 $15 \mathrm{ms}$

16ms

18ms

14ms

14ms

 $15 \mathrm{ms}$

 $16 \mathrm{ms}$

node256

node257

node258

node259

25

26

45

75

5

9

26

45

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node260	14	7	6	$159 \mathrm{ms}$	$13 \mathrm{ms}$	13ms
node261	23	5	14	149ms	14ms	14ms
node262	14	5	5	$159 \mathrm{ms}$	$13 \mathrm{ms}$	13ms
node263	18	5	5	$159 \mathrm{ms}$	14ms	13ms
node264	36	14	18	$253 \mathrm{ms}$	$15 \mathrm{ms}$	14ms
node265	47	36	5	149ms	$15 \mathrm{ms}$	15ms
node266	66	23	47	$254 \mathrm{ms}$	$17 \mathrm{ms}$	16ms
node267	25	5	8	$159 \mathrm{ms}$	14ms	14ms
node268	92	66	25	$253 \mathrm{ms}$	18ms	18ms
node269	12	5	5	159ms	$13 \mathrm{ms}$	13ms
node270	20	5	12	148ms	14ms	13ms
node271	29	20	5	149ms	14ms	14ms
node272	32	5	29	148ms	$15 \mathrm{ms}$	14ms
node273	15	5	5	$159 \mathrm{ms}$	$13 \mathrm{ms}$	13ms
node274	50	32	15	255ms	$16 \mathrm{ms}$	15ms
node275	20	6	8	164ms	14ms	14ms
node276	14	6	5	168ms	$13 \mathrm{ms}$	13ms
node277	19	6	14	$157 \mathrm{ms}$	14ms	14ms
node278	33	19	9	149ms	$15 \mathrm{ms}$	14ms
node279	57	20	33	$255 \mathrm{ms}$	$16 \mathrm{ms}$	16ms

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node280	98	50	57	$255 \mathrm{ms}$	18ms	$17 \mathrm{ms}$
node281	107	6	98	149ms	$18 \mathrm{ms}$	$17 \mathrm{ms}$
node282	178	92	107	256ms	22ms	21ms
node283	190	178	6	149ms	21ms	19ms
node284	196	5	190	149ms	$21 \mathrm{ms}$	19ms
node285	200	5	196	150ms	$22 \mathrm{ms}$	19ms
node286	293	75	200	254ms	$29 \mathrm{ms}$	26ms
node287	436	5	293	150ms	$34 \mathrm{ms}$	29ms
node288	559	5	436	149ms	$41 \mathrm{ms}$	34ms
node289	666	25	559	258ms	$51 \mathrm{ms}$	44ms
node290	1098	41	666	254ms	$77 \mathrm{ms}$	$65 \mathrm{ms}$
node291	1383	8	1098	149ms	$87 \mathrm{ms}$	71ms
node292	1565	24	1383	255ms	$108 \mathrm{ms}$	$90 \mathrm{ms}$
node293	7429	7429	1565	$267 \mathrm{ms}$	$264 \mathrm{ms}$	200ms
node294	7429	796	7429	264ms	$267 \mathrm{ms}$	186ms
node295	37	8	10	159ms	$15 \mathrm{ms}$	14ms
node296	26	5	7	159ms	$14 \mathrm{ms}$	14ms
node297	24	5	5	159ms	14ms	14ms
node298	41	5	24	149ms	$15 \mathrm{ms}$	14ms
node299	24	5	5	$159 \mathrm{ms}$	$14 \mathrm{ms}$	14ms

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node300	58	24	5	148ms	$16 \mathrm{ms}$	15ms
node301	174	41	58	$256 \mathrm{ms}$	$23 \mathrm{ms}$	21ms
node302	305	26	174	$252 \mathrm{ms}$	$31 \mathrm{ms}$	27ms
node303	21	5	6	162ms	14ms	14ms
node304	38	5	21	222ms	$15 \mathrm{ms}$	14ms
node305	16	6	5	163ms	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node306	24	5	16	222ms	14ms	14ms
node307	34	5	24	222ms	$15 \mathrm{ms}$	14ms
node308	47	5	34	183ms	$15 \mathrm{ms}$	$15 \mathrm{ms}$
node309	13	5	5	159ms	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node310	19	5	13	149ms	14ms	14ms
node311	27	7	7	$159 \mathrm{ms}$	14ms	14ms
node312	31	5	27	148ms	14ms	14ms
node313	73	5	31	148ms	$16 \mathrm{ms}$	16ms
node314	97	73	5	148ms	18ms	$17 \mathrm{ms}$
node315	151	6	97	149ms	21ms	19ms
node316	171	7	151	148ms	$22 \mathrm{ms}$	20ms
node317	236	19	171	258ms	$26 \mathrm{ms}$	24ms
node318	309	47	236	$253 \mathrm{ms}$	$32 \mathrm{ms}$	29ms
node319	18	5	5	159ms	14ms	14ms

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node320	30	5	18	149ms	14ms	14ms
node321	51	6	30	149ms	$16 \mathrm{ms}$	15ms
node322	65	51	5	149ms	$16 \mathrm{ms}$	16ms
node323	424	309	65	253ms	$36 \mathrm{ms}$	$32 \mathrm{ms}$
node324	464	5	424	148ms	$37 \mathrm{ms}$	32ms
node325	14	5	6	160ms	$13 \mathrm{ms}$	13ms
node326	25	5	14	222ms	14ms	14ms
node327	536	464	25	$359 \mathrm{ms}$	42ms	$36 \mathrm{ms}$
node328	569	6	536	222ms	$43 \mathrm{ms}$	$36 \mathrm{ms}$
node329	739	38	569	279ms	$58 \mathrm{ms}$	49ms
node330	23	5	5	159ms	14ms	14ms
node331	25	5	5	159ms	14ms	14ms
node332	24	5	6	159ms	14ms	14ms
node333	46	24	5	149ms	$15 \mathrm{ms}$	15ms
node334	72	5	46	149ms	$17 \mathrm{ms}$	16ms
node335	98	72	6	148ms	18ms	$17 \mathrm{ms}$
node336	212	25	98	252ms	24ms	22ms
node337	30	5	9	$159 \mathrm{ms}$	14ms	14ms
node338	76	30	5	148ms	$16 \mathrm{ms}$	$16 \mathrm{ms}$
node339	25	5	5	$159 \mathrm{ms}$	14ms	14ms

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node340	68	6	25	149ms	$16 \mathrm{ms}$	16ms
node341	26	6	5	$159 \mathrm{ms}$	$14 \mathrm{ms}$	14ms
node342	140	68	26	252ms	20ms	19ms
node343	244	76	140	256ms	$26 \mathrm{ms}$	24ms
node344	267	5	244	149ms	$26 \mathrm{ms}$	$23 \mathrm{ms}$
node345	22	5	6	159ms	$14 \mathrm{ms}$	14ms
node346	48	22	5	176ms	$15 \mathrm{ms}$	$15 \mathrm{ms}$
node347	65	48	6	222ms	$16 \mathrm{ms}$	$15 \mathrm{ms}$
node348	101	65	7	223ms	$18 \mathrm{ms}$	$17 \mathrm{ms}$
node349	416	267	101	356ms	$36 \mathrm{ms}$	$32 \mathrm{ms}$
node350	455	5	416	223ms	$35 \mathrm{ms}$	$30 \mathrm{ms}$
node351	701	212	455	$358 \mathrm{ms}$	$54 \mathrm{ms}$	$49 \mathrm{ms}$
node352	19	7	5	163ms	$14 \mathrm{ms}$	$13 \mathrm{ms}$
node353	35	5	19	222ms	$14 \mathrm{ms}$	14ms
node354	7	5	5	163ms	$13 \mathrm{ms}$	$13 \mathrm{ms}$
node355	25	6	7	222ms	14ms	14ms
node356	42	5	25	223ms	$15 \mathrm{ms}$	$15 \mathrm{ms}$
node357	47	5	42	222ms	15ms	$15 \mathrm{ms}$
node358	83	47	5	202ms	$17 \mathrm{ms}$	16ms
node359	15	6	5	159ms	$13 \mathrm{ms}$	$13 \mathrm{ms}$

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node360	122	83	15	252ms	$20 \mathrm{ms}$	18ms
node361	21	5	5	$159 \mathrm{ms}$	$14 \mathrm{ms}$	$13 \mathrm{ms}$
node362	51	21	6	150ms	$15 \mathrm{ms}$	$15 \mathrm{ms}$
node363	75	6	51	150ms	$16 \mathrm{ms}$	16ms
node364	101	75	5	148ms	18ms	$17 \mathrm{ms}$
node365	283	122	101	320ms	$29 \mathrm{ms}$	$27 \mathrm{ms}$
node366	373	35	283	$360 \mathrm{ms}$	$34 \mathrm{ms}$	$30 \mathrm{ms}$
node367	420	373	5	206ms	$34 \mathrm{ms}$	28ms
node368	473	5	420	149ms	$36 \mathrm{ms}$	$30 \mathrm{ms}$
node369	1117	701	473	254ms	$77 \mathrm{ms}$	$70 \mathrm{ms}$
node370	1195	23	1117	260ms	81ms	66ms
node371	9	5	5	159ms	$13 \mathrm{ms}$	13ms
node372	23	9	5	148ms	14ms	14ms
node373	17	5	5	159ms	14ms	13ms
node374	41	5	17	148ms	$15 \mathrm{ms}$	14ms
node375	81	41	5	149ms	$17 \mathrm{ms}$	16ms
node376	25	5	5	$159 \mathrm{ms}$	14ms	14ms
node377	182	81	25	254ms	23ms	21ms
node378	271	23	182	$253 \mathrm{ms}$	29ms	26ms
node379	25	5	5	$159 \mathrm{ms}$	14ms	14ms

node	psrsize	lsrsize	rsrsize	tippat	SR opt	SR opt2
node380	69	6	25	148ms	16ms	$15 \mathrm{ms}$
node381	91	5	69	$149 \mathrm{ms}$	18ms	$17 \mathrm{ms}$
node382	466	271	91	256ms	$39 \mathrm{ms}$	$35 \mathrm{ms}$
node383	1553	1195	466	256ms	101ms	89ms
node384	1556	1553	6	156ms	88ms	$67 \mathrm{ms}$
node385	2211	739	1556	$359 \mathrm{ms}$	$159 \mathrm{ms}$	141ms
node386	2336	5	2211	224ms	$135 \mathrm{ms}$	104ms
node387	2372	5	2336	179ms	138ms	106ms
node388	2639	305	2372	257ms	204ms	174ms
node389	25	5	5	159ms	$14 \mathrm{ms}$	14ms
node390	2764	2639	25	254ms	160ms	124ms
node391	2963	37	2764	257ms	$206 \mathrm{ms}$	$167 \mathrm{ms}$
node392	3006	5	2963	150ms	$173 \mathrm{ms}$	132ms
node393	7429	7429	3006	276ms	278ms	227ms
node394	7429	927	7429	275ms	277ms	191ms
node395	7429	7429	6	164ms	$261 \mathrm{ms}$	164ms
node396	17	5	5	159ms	14ms	14ms
node397	25	5	17	149ms	14ms	14ms
node398	7429	7429	25	272ms	271ms	173ms
node399	7429	7429	5	162ms	$258 \mathrm{ms}$	163ms

rsrsize

node