

Table The statistics of operations for breaking cycles in DNS

SCC	$Edge'(C_i, C_j)$	$\omega(C_i, C_j)$	$Cycles_b$	$Cycles_a$	$SCplx(C_i, C_j)$	Bf	N_m	N_a
$SCC_1 = \{8, 11, 21, 25, 32, 48, 58\}$	$21 \rightarrow 11$	10	16	6	0.0410	0.8579	1	0
	$8 \rightarrow 21$	1	6	5	0.0410	0.0558	1	0
	$48 \rightarrow 32$	1	5	4	0.0410	0.0355	1	0
	$32 \rightarrow 58$	1	4	3	0.6077	0.0301	2	9
$SCC_2 = \{33, 38, 52\}$	$38 \rightarrow 33$	2	3	1	0.2707	0.0138	1	4
	$52 \rightarrow 33$	1	1	0	0.2707	0.0069	1	4

Table The statistics of operations for breaking cycles in ANT

SCC	$Edge'(C_i, C_j)$	$\omega(C_i, C_j)$	$Cycles_b$	$Cycles_a$	$SCplx(C_i, C_j)$	Bf	N_m	N_a
$SCC_1 = \{2, 4, 10, 16, 17, 18, 19, 20, 21, 22, 23, 24\}$	$20 \rightarrow 24$	214	654	440	0.0851	0.1972	1	3
	$18 \rightarrow 24$	191	440	249	0.1220	0.1926	2	3
	$18 \rightarrow 22$	39	249	210	0.0554	0.1315	1	1
	$20 \rightarrow 18$	70	210	140	0.1359	0.1285	1	6
	$19 \rightarrow 18$	90	140	50	0.1942	0.0896	3	6
	$20 \rightarrow 23$	10	50	40	0.0554	0.0749	1	1
	$16 \rightarrow 22$	6	40	34	0.0554	0.0535	1	1
	$2 \rightarrow 20$	10	34	24	0.1575	0.0435	1	7
	$2 \rightarrow 21$	10	24	14	0.1401	0.0428	2	6
	$16 \rightarrow 21$	5	14	9	0.2072	0.0254	5	6
	$16 \rightarrow 20$	5	9	4	1.0626	0.0062	23	7
	$16 \rightarrow 17$	1	4	3	0.0554	0.0103	1	1
	$2 \rightarrow 16$	2	3	1	0.7089	0.0030	1	31
	$20 \rightarrow 21$	1	1	0	0.0026	0.0008	1	0

Table The statistics of operations for breaking cycles in BCEL

SCC	$Edge'(C_i, C_j)$	$\omega(C_i, C_j)$	$Cycles_b$	$Cycles_a$	$SCplx(C_i, C_j)$	Bf	N_m	N_a
$SCC_1 = \{2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 43, 44, 45\}$	$2 \rightarrow 21$	133674	416091	282417	0.0979	0.0189	1	1
	$20 \rightarrow 45$	40096	282417	242321	0.0884	0.0189	1	0
	$4 \rightarrow 34$	33715	242321	208606	0.1218	0.0189	1	2
	$17 \rightarrow 18$	27889	208606	180717	0.0839	0.0189	0	2
	$45 \rightarrow 26$	16300	180717	164417	0.0884	0.0189	1	0
	$15 \rightarrow 45$	13610	164417	150807	0.0884	0.0189	1	0
	$10 \rightarrow 45$	13610	150807	137197	0.0884	0.0189	1	0
	$16 \rightarrow 45$	13593	137197	123604	0.0884	0.0189	1	0
	$13 \rightarrow 45$	13534	123604	110070	0.0884	0.0189	1	0
	$9 \rightarrow 45$	13505	110070	96565	0.0884	0.0189	1	0
	$11 \rightarrow 45$	13505	96565	83060	0.0884	0.0189	1	0
	$12 \rightarrow 45$	13505	83060	69555	0.0884	0.0189	1	0
	$14 \rightarrow 45$	13505	69555	56050	0.0884	0.0189	1	0

SCC	$Edge'(C_i, C_j)$	$\omega(C_i, C_j)$	$Cycles_b$	$Cycles_a$	$SCplx(C_i, C_j)$	Bf	N_m	N_a
	7→45	12888	56050	43162	0.0884	0.0189	1	0
	19→45	12772	43162	30390	0.0884	0.0189	1	0
	6→45	10735	30390	19655	0.0884	0.0189	1	0
	6→36	10735	19655	8920	0.0884	0.0189	1	0
	18→45	3904	8920	5016	0.0884	0.0189	1	0
	18→36	3904	5016	1112	0.0884	0.0189	1	0
	8→18	37	1112	1075	0.1957	0.0189	2	2
	6→19	15	1075	1060	0.0979	0.0172	1	1
	6→14	15	1060	1045	0.0979	0.0172	1	1
	6→12	15	1045	1030	0.0979	0.0172	1	1
	6→11	15	1030	1015	0.0979	0.0172	1	1
	6→9	15	1015	1000	0.0979	0.0172	1	1
	6→7	15	1000	985	0.0979	0.0172	1	1
	6→16	15	985	970	0.1218	0.0172	1	2
	8→6	3	970	967	0.0884	0.0172	1	0
	20→6	1	967	966	0.0884	0.0172	1	0
	14→18	1	966	965	0.1218	0.0172	1	2
	19→18	1	965	964	0.1218	0.0172	1	2
	16→18	1	964	963	0.1957	0.0172	2	2
	12→18	1	963	962	0.1218	0.0172	1	2
	11→18	1	962	961	0.1817	0.0172	2	1
	9→18	1	961	960	0.1218	0.0172	1	2
	7→18	1	960	959	0.1957	0.0140	2	2
	4→32	142	959	817	0.1218	0.0140	1	2
	2→40	88	817	729	0.1218	0.0140	1	2
	2→29	88	729	641	0.0839	0.0140	0	2
	33→45	63	641	578	0.0884	0.0140	1	0
	2→32	82	578	496	0.1218	0.0140	1	2
	33→36	63	496	433	0.0884	0.0140	1	0
	22→45	30	433	403	0.0884	0.0140	1	0
	25→45	30	403	373	0.0884	0.0140	1	0
	34→45	30	373	343	0.0884	0.0140	1	0
	43→45	30	343	313	0.0884	0.0140	1	0
	44→45	30	313	283	0.0884	0.0140	1	0
	2→38	31	283	252	0.0979	0.0140	1	1
	2→37	31	252	221	0.0420	0.0135	0	1
	5→36	31	221	190	0.0884	0.0125	1	0
	2→36	30	190	160	0.0884	0.0114	1	0
	2→39	29	160	131	0.0420	0.0114	0	1

SCC	$Edge'(C_i, C_j)$	$\omega(C_i, C_j)$	$Cycles_b$	$Cycles_a$	$SCplx(C_i, C_j)$	Bf	N_m	N_a
	$2 \rightarrow 4$	55	131	76	0.3469	0.0100	1	8
	$35 \rightarrow 32$	8	76	68	0.1218	0.0100	1	2
	$21 \rightarrow 45$	4	68	64	0.0884	0.0100	1	0
	$45 \rightarrow 40$	4	64	60	0.1218	0.0093	1	2
	$45 \rightarrow 32$	4	60	56	0.1218	0.0093	1	2
	$45 \rightarrow 29$	4	56	52	0.1218	0.0089	1	2
	$30 \rightarrow 35$	10	52	42	0.1768	0.0086	2	0
	$30 \rightarrow 26$	5	42	37	0.1768	0.0086	2	0
	$45 \rightarrow 39$	2	37	35	0.0979	0.0086	1	1
	$45 \rightarrow 31$	2	35	33	0.1218	0.0074	1	2
	$30 \rightarrow 39$	2	33	31	0.0884	0.0073	1	0
	$45 \rightarrow 4$	3	31	28	0.3469	0.0072	1	8
	$45 \rightarrow 28$	2	28	26	0.1897	0.0050	1	4
	$45 \rightarrow 35$	10	26	16	0.0884	0.0049	1	0
	$45 \rightarrow 30$	3	16	13	0.5444	0.0047	1	20
	$41 \rightarrow 45$	1	13	12	0.0884	0.0037	1	0
	$2 \rightarrow 43$	1	12	11	0.0979	0.0026	1	1
	$2 \rightarrow 22$	1	11	10	0.0979	0.0016	1	1
	$2 \rightarrow 34$	1	10	9	0.1218	0.0016	1	2
	$2 \rightarrow 25$	1	9	8	0.1218	0.0008	1	2
	$2 \rightarrow 45$	6	8	2	0.0884	0.0004	1	0
	$2 \rightarrow 44$	1	2	1	0.1537	0.0004	1	3
	$5 \rightarrow 45$	1	1	0	0.0884	0.0002	1	0