Table 1: Additional swap gates and circuit depth, $n\,=\,5$

layout	benchmark	g	d	s basic	s sabre	s look	swap (%)	d basic	d swap	d look	d (%)
full_10_2	ghz	7	7	0	0	0	nan	7	7	7	0
full_10_2	dj	36	11	0	0	0	nan	11	11	11	0
full_10_2	graphstate	50	22	0	3	0	-100	22	22	22	0
full_10_2	qft	71	38	0	0	0	nan	38	38	38	0
full_10_2	wstate	73	45	0	0	0	nan	45	45	45	0
full_10_2	qftentangled	78	42 21	0	0	0	nan	42	42 21	$\frac{42}{21}$	0
full_10_2 full_10_2	vqe	83 95	$\frac{21}{31}$	0	$0 \\ 3$	$0 \\ 0$	nan -100	21 31	42	31	0 -26.19
full_10_2	qaoa realamprandom	130	37	0	0	0	nan	37	37	$\frac{31}{37}$	0
full_10_2	twolocalrandom	130	37	0	0	0	nan	37	37	37	0
full_10_2	su2random	150	41	0	15	0	-100	41	64	41	-35.94
full_10_2	qnn	154	58	0	39	0	-100	58	133	58	-56.39
full_10_2	portfoliogaoa	195	72	0	0	0	nan	72	72	72	0
full_10_2	random	223	97	0	12	0	-100	97	126	97	-23.02
$full_10_2$	portfoliovge	310	107	0	0	0	nan	107	107	107	0
$full_7_3$	$_{ m ghz}$	7	7	0	0	0	nan	7	7	7	0
$full_7_3$	$\mathrm{d}\mathrm{j}$	36	11	0	3	0	-100	11	14	11	-21.43
$full_7_3$	$\operatorname{graphstate}$	50	22	0	0	0	nan	22	22	22	0
$full_7_3$	qft	71	38	0	0	0	nan	38	38	38	0
full_7_3	wstate	73	45	0	0	0	nan	45	45	45	0
full_7_3	qftentangled	78	42	0	15	0	-100	42	74	42	-43.24
full_7_3	vqe	83	21	0	0	0	nan	21	21	21	0
full_7_3	qaoa	95	31	0	0	0	nan	31	31	31	0
full_7_3	realamprandom	130	37	0	42	0	-100	37	108	37	-65.74
full_7_3	twolocalrandom	130	37	0	15	0	-100	37	71	37	-47.89
full_7_3 full_7_3	su2random	$\frac{150}{154}$	41 58	0	$0\\12$	0	nan -100	41 58	41 90	41 58	0 -35.56
full_7_3	qnn portfolioqaoa	194	72	$0 \\ 0$	0	$0 \\ 0$	nan	72	90 72	72	-55.50
full_7_3	random	$\frac{193}{223}$	97	0	6	0	-100	97	140	97	-30.71
full_7_3	portfoliovge	310	107	0	48	0	-100	107	172	107	-37.79
grid_4_5	ghz	7	7	3	0	9	nan	10	7	8	14.29
$grid_4_5$	dj	36	11	21	3	3	0	37	14	12	-14.29
$grid_4_5$	graphstate	50	22	18	3	9	200	41	25	20	-20
$grid_{-}4_{-}5$	qft	71	38	36	15	27	80	82	54	52	-3.7
$grid_4_5$	wstate	73	45	12	0	9	nan	51	45	40	-11.11
$grid_4_5$	qftentangled	78	42	36	18	15	-16.67	78	57	45	-21.05
$grid_4_5$	vqe	83	21	18	0	15	nan	39	21	29	38.1
$grid_4_5$	qaoa	95	31	18	6	27	350	59	50	45	-10
grid_4_5	realamprandom	130	37	81	42	48	14.29	160	97	59	-39.18
grid_4_5	twolocalrandom	130	37	81	42	48	14.29	160	101	59	-41.58
grid_4_5	su2random	150	41	81	42 30	48	14.29	174	106 103	63	-40.57 -22.33
$grid_4_5$ $grid_4_5$	qnn portfolioqaoa	$\frac{154}{195}$	$\frac{58}{72}$	54 81	42	54 69	80 64.29	$\frac{151}{220}$	138	80 104	-22.33 -24.64
grid_4_5 grid_4_5	random	$\frac{193}{223}$	97	39	12	27	125	169	106	111	4.72
grid_4_5	portfoliovqe	310	107	81	39	48	23.08	239	175	115	-34.29
grid_9_3	ghz	7	7	6	3	6	100	13	10	8	-20
grid_9_3	dj	36	11	9	3	0	-100	21	17	11	-35.29
grid_9_3	graphstate	50	22	15	3	6	100	37	32	20	-37.5
$grid_9_3$	qft	71	38	39	12	21	75	74	53	41	-22.64
grid_9_3	wstate	73	45	18	0	12	nan	54	45	41	-8.89
$grid_9_3$	qftentangled	78	42	45	21	27	28.57	87	76	45	-40.79
$grid_{-}9_{-}3$	vqe	83	21	15	0	12	nan	35	21	27	28.57
$grid_9_3$	qaoa	95	31	9	9	21	133.33	37	48	48	0
$grid_9_3$	realamprandom	130	37	96	24	42	75	145	89	64	-28.09
grid_9_3	twolocalrandom	130	37	96	36	42	16.67	145	93	64	-31.18
grid_9_3	su2random	150	41	96	24	42	75	155	96	68	-29.17
grid_9_3	qnn	154	58 70	63	30	48	60	132	97	78	-19.59
grid_9_3	portfolioqaoa	195	72	96	39	69 27	76.92	199	141	121	-14.18
grid_9_3 grid_9_3	random portfoliovqe	$\frac{223}{310}$	$97 \\ 107$	30 96	12 42	27 57	$125 \\ 35.71$	$\frac{114}{209}$	106 181	111 111	4.72 -38.67
grid_9_3 line_5_4	ghz	310 7	107 7	96	9	18	35.71 100	209 7	181	9	-38.67 -30.77
1111C=0=4	8117	1	1	U	<i>9</i>	10	100	<u> </u>	10	9	-50.11

Table 1: Additional swap gates and circuit depth, $n\,=\,5$

layout	benchmark	g	d	s basic	s sabre	s look	swap (%)	d basic	d swap	d look	d (%)
$line_5_4$	$\mathrm{d}\mathrm{j}$	36	11	36	6	6	0	40	17	14	-17.65
$line_5_4$	graphstate	50	22	12	9	12	33.33	32	25	21	-16
$line_5_4$	qft	71	38	72	24	24	0	92	57	42	-26.32
line_5_4	wstate	73	45	0	0	15	nan	45	45	33	-26.67
line_5_4	qftentangled	78	42	72	24	36	50	96	73	50	-31.51
line_5_4	vqe	83	21 31	0	$0\\12$	15 18	nan 50	21	21 42	24 39	14.29 -7.14
$line_{-}5_{-}4$ $line_{-}5_{-}4$	qaoa realamprandom	95 130	$\frac{31}{37}$	48 180	$\frac{12}{72}$	93	$\frac{50}{29.17}$	106 206	128	39 59	-7.14 -53.91
line_5_4	twolocalrandom	130	37	180	72	93	29.17 29.17	206	113	59 59	-33.91 -47.79
line_5_4	su2random	150	41	180	69	93	34.78	219	123	63	-48.78
line_5_4	qnn	154	58	120	48	84	75	172	127	80	-37.01
line_5_4	portfolioqaoa	195	72	180	66	93	40.91	255	166	90	-45.78
$line_5_4$	random	223	97	63	12	30	150	160	106	99	-6.6
$line_5_4$	portfoliovqe	310	107	180	69	90	30.43	242	187	126	-32.62
$ring_10_2$	ghz	7	7	0	3	9	200	7	10	8	-20
$ring_10_2$	$\ddot{\mathrm{d}}\mathrm{j}$	36	11	36	3	3	0	40	17	12	-29.41
$ring_10_2$	graphstate	50	22	12	6	9	50	32	25	20	-20
$ring_10_2$	qft	71	38	72	15	24	60	92	60	42	-30
$ring_10_2$	wstate	73	45	0	0	9	nan	45	45	40	-11.11
$ring_10_2$	qftentangled	78	42	72	21	30	42.86	96	75	49	-34.67
$ring_10_2$	vqe	83	21	0	0	15	nan	21	21	29	38.1
$ring_10_2$	qaoa	95	31	48	12	27	125	106	47	45	-4.26
ring_10_2	realamprandom	130	37	180	51	60	17.65	206	109	66	-39.45
ring_10_2	twolocalrandom	130	37	180	51	60	17.65	206	109	66	-39.45
ring_10_2	su2random	150	41 58	180 120	48 39	60 66	$25 \\ 69.23$	219 172	$\frac{110}{122}$	70 84	-36.36 -31.15
ring_10_2 ring_10_2	qnn portfoliogaoa	$154 \\ 195$	58 72	180	59 66	87	31.82	$\frac{172}{255}$	166	110	-33.73
ring_10_2 ring_10_2	random	$\frac{193}{223}$	97	63	12	66	31.02 450	160	106	121	-55.75 14.15
ring_10_2	portfoliovqe	310	107	180	51	93	82.35	242	204	121 125	-38.73
ring_7_3	ghz	7	7	0	0	9	nan	7	7	8	14.29
ring_7_3	dj	36	11	24	3	3	0	30	18	12	-33.33
$ring_{-7}$ _3	graphstate	50	22	6	6	9	50	24	22	20	-9.09
$ring_{-}7_{-}3$	qft	71	38	51	18	24	33.33	77	57	42	-26.32
$ring_{-}7_{-}3$	wstate	73	45	0	0	9	nan	45	45	40	-11.11
$ring_7_3$	qftentangled	78	42	51	21	30	42.86	81	76	49	-35.53
$ring_7_3$	vqe	83	21	0	0	15	nan	21	21	29	38.1
$ring_7_3$	qaoa	95	31	24	9	27	200	54	48	45	-6.25
$ring_{-}7_{-}3$	realamprandom	130	37	120	48	60	25	129	102	66	-35.29
$ring_{-7}_{-3}$	twolocalrandom	130	37	120	48	60	25	129	107	66	-38.32
ring_7_3	su2random	150	41	120	51	60	17.65	138	117	70	-40.17
ring_7_3	qnn	154	58 70	93	48	66	37.5	122	127	84	-33.86
ring_7_3 ring_7_3	portfolioqaoa random	$\frac{195}{223}$	72 97	120 60	51 12	87 66	70.59 450	157 157	177 106	110 121	-37.85 14.15
$ring_{-7}$ 3	portfoliovqe	310	107	120	48	93	93.75	179	193	$121 \\ 125$	-35.23
t_horizontal_5_4	ghz	7	7	9	3	6	100	16	10	9	-10
t_horizontal_5_4	dj	36	11	$\frac{3}{24}$	3	3	0	37	16	12	-25
t_horizontal_5_4	graphstate	50	22	12	6	9	50	35	25	20	-20
$t_{\text{horizontal}}_{5_{\text{-}}4}$	qft	71	38	48	15	24	60	82	60	$\frac{-3}{42}$	-30
$t_{horizontal_5_4}$	wstate	73	45	18	0	6	nan	58	45	39	-13.33
$t_{horizontal_5_4}$	qftentangled	78	42	60	24	33	37.5	90	73	48	-34.25
$t_{-}horizontal_{-}5_{-}4$	vqe	83	21	12	0	12	nan	33	21	25	19.05
$t_{-}horizontal_{-}5_{-}4$	qaoa	95	31	33	9	24	166.67	100	48	45	-6.25
$t_{-}horizontal_{-}5_{-}4$	realamprandom	130	37	117	51	60	17.65	185	106	66	-37.74
t_horizontal_5_4	twolocalrandom	130	37	117	72	60	-16.67	185	126	66	-47.62
t_horizontal_5_4	su2random	150	41	117	48	60	25	198	115	70	-39.13
t_horizontal_5_4	qnn	154	58	81	48	66	37.5	172	127	84	-33.86
t_horizontal_5_4	portfolioqaoa	195	72	117	60	87	45	252	179	110	-38.55
t_horizontal_5_4	random	223	97	36	12	66	450	151	106	121	14.15
t_horizontal_5_4 t_vertical_5_4	portfoliovqe	310	$\frac{107}{7}$	117	48	93	93.75	239 16	193	125	-35.23 28.57
t_vertical_5_4 t_vertical_5_4	$_{ m dj}^{ m ghz}$	7 36	7 11	9 24	$0 \\ 3$	6 3	nan 0	16 37	7 17	9 12	28.57 -29.41
0-10101011-0-4	uj	50	11	∠4 1	<u> </u>	J	<u> </u>	91	11	14	-20.41

Table 1: Additional swap gates and circuit depth, $n\,=\,5$

layout	benchmark	g	d	s basic	s sabre	s look	swap (%)	d basic	d swap	d look	d (%)
t_vertical_5_4	graphstate	50	22	12	6	9	50	35	22	20	-9.09
$t_{vertical_5_4}$	qft	71	38	48	15	24	60	82	60	42	-30
$t_{vertical_5_4}$	wstate	73	45	18	0	6	nan	58	45	39	-13.33
$t_{vertical_5_4}$	qftentangled	78	42	60	21	33	57.14	90	75	48	-36
$t_{vertical_5_4}$	vqe	83	21	12	0	12	nan	33	21	25	19.05
$t_{vertical_5_4}$	qaoa	95	31	33	9	24	166.67	100	48	45	-6.25
$t_{vertical_5_4}$	realamprandom	130	37	117	51	60	17.65	185	106	66	-37.74
$t_{vertical_5_4}$	two local random	130	37	117	48	60	25	185	107	66	-38.32
$t_{vertical_5_4}$	su2random	150	41	117	48	60	25	198	110	70	-36.36
$t_{vertical_5_4}$	qnn	154	58	81	45	66	46.67	172	133	84	-36.84
$t_{vertical_5_4}$	portfolioqaoa	195	72	117	66	87	31.82	252	166	110	-33.73
$t_{vertical_5_4}$	random	223	97	36	12	66	450	151	106	121	14.15
$t_vertical_5_4$	portfoliovqe	310	107	117	57	93	63.16	239	205	125	-39.02

Table 2: Additional swap gates and circuit depth, n=10

layout	benchmark	g	d	s basic	s sabre	s look	swap (%)	d basic	d swap	d look	d (%)
full_10_2	ghz	12	12	0	6	0	-100	12	15	12	-20
full_10_2	dj	79	17	0	3	0	-100	17	20	17	-15
full_10_2	$\operatorname{graphstate}$	100	23	0	6	0	-100	23	30	23	-23.33
full_10_2	wstate	163	90	0	0	0	nan	90	90	90	0
full_10_2	vqe	168	26	0	0	0	nan	26	26	26	0
full_10_2	qaoa	190	34	0	6	0	-100	34	47	34	-27.66
full_10_2	qft	270	78 82	0	18 18	0	-100	78	133	78	-41.35 -47.44
full_10_2 full_10_2	${ m qftentangled} \ { m realamprandom}$	$\frac{282}{335}$	82 57	$0 \\ 0$	105	$0 \\ 0$	-100 -100	82 57	$\frac{156}{213}$	82 57	-47.44 -73.24
full_10_2	twolocalrandom	ააა 335	57 57	0	81	0	-100 -100	57	196	57	-70.24 -70.92
full_10_2	su2random	375	61	0	99	0	-100	61	236	61	-74.15
full_10_2	qnn	459	108	0	90	0	-100	108	310	108	-65.16
full_10_2	portfoliogaoa	615	132	0	111	0	-100	132	426	132	-69.01
full_10_2	random	646	155	0	93	0	-100	155	320	155	-51.56
full_10_2	portfoliovge	1145	217	0	15	0	-100	217	288	217	-24.65
full_7_3	ghz	12	12	0	9	0	-100	12	21	12	-42.86
$full_7_3$	$\stackrel{\circ}{\mathrm{d}\mathrm{j}}$	79	17	48	9	9	0	70	26	22	-15.38
$full_7_3$	graphstate	100	23	18	3	12	300	53	24	23	-4.17
$full_7_3$	wstate	163	90	0	6	0	-100	90	93	90	-3.23
$full_7_3$	vqe	168	26	0	3	0	-100	26	38	26	-31.58
$full_7_3$	qaoa	190	34	48	6	15	150	138	50	42	-16
$full_7_3$	qft	270	78	168	45	150	233.33	236	159	140	-11.95
$full_7_3$	qftentangled	282	82	168	57	150	163.16	240	181	144	-20.44
$full_{-}7_{-}3$	real amprandom	335	57	471	99	141	42.42	632	224	130	-41.96
$full_7_3$	two local random	335	57	471	195	141	-27.69	632	264	130	-50.76
$full_7_3$	su2random	375	61	471	126	141	11.9	657	220	135	-38.64
$full_7_3$	qnn	459	108	294	180	249	38.33	531	338	214	-36.69
full_7_3	portfolioqaoa	615	132	471	156	231	48.08	845	478	239	-50
full_7_3	random	646	155	159	114	132	15.79	419	320	179	-44.06
full_7_3	portfoliovqe	1145	217	471	105	255	142.86	878	450	308	-31.56
grid_4_5	ghz	12	12	6	$\begin{array}{c} 6 \\ 21 \end{array}$	24	300	18	18	16	-11.11
grid_4_5	$rac{ ext{dj}}{ ext{graphstate}}$	79	17 23	144	21 15	18 36	-14.29 140	88 70	$\frac{44}{35}$	24 24	-45.45 -31.43
$grid_{-}4_{-}5$ $grid_{-}4_{-}5$	wstate	$\frac{100}{163}$	23 90	51 24	15 15	30 42	180	96	99	65	-34.34
grid_4_5 grid_4_5	vqe	168	26	36	3	45	1400	61	35	33	-54.54 -5.71
grid_4_5	qaoa	190	$\frac{20}{34}$	105	21	33	57.14	174	59	38	-35.59
grid_4_5	qft	270	78	507	108	195	80.56	335	176	130	-26.14
grid_4_5	qftentangled	282	82	414	108	180	66.67	285	213	122	-42.72
grid_4_5	realamprandom	335	57	1323	258	375	45.35	786	246	138	-43.9
$grid_4_5$	twolocalrandom	335	57	1323	258	375	45.35	786	254	138	-45.67
$grid_4_5$	su2random	375	61	1323	261	375	43.68	815	267	142	-46.82
$grid_4_5$	qnn	459	108	876	186	390	109.68	636	291	220	-24.4
$grid_4_5$	portfolioqaoa	615	132	1323	261	450	72.41	956	356	262	-26.4
$grid_4_5$	random	646	155	477	186	375	101.61	643	325	222	-31.69
$grid_4_5$	portfoliovqe	1145	217	1323	261	342	31.03	994	465	265	-43.01
$grid_9_3$	ghz	12	12	12	9	24	166.67	24	21	16	-23.81
$grid_9_3$	$\mathrm{d}\mathrm{j}$	79	17	90	21	12	-42.86	82	46	22	-52.17
$grid_9_3$	$\operatorname{graphstate}$	100	23	42	15	48	220	57	33	26	-21.21
$grid_9_3$	wstate	163	90	21	0	27	nan	102	90	46	-48.89
grid_9_3	vqe	168	26	9	6	54	800	31	35	43	22.86
grid_9_3	qaoa	190	34	63	12	78	550	145	56	49	-12.5
grid_9_3	qft	270	78	279	96	180	87.5	288	211	120	-43.13
grid_9_3	qftentangled	282	82 57	282	99	198	100	288	177	135	-23.73
grid_9_3	realamprandom	$\frac{335}{335}$	57	690 600	$\frac{231}{273}$	321	38.96 17.58	591 501	248	151	-39.11 40.5
grid_9_3	twolocalrandom	$\frac{335}{375}$	57 61	690 600	273 273	321	17.58	591 610	299	151	-49.5
grid_9_3 grid_9_3	su2random	$375 \\ 459$	108	690 456	273 180	$\frac{321}{240}$	17.58 33.33	$619 \\ 537$	$\frac{310}{275}$	$157 \\ 174$	-49.35 -36.73
grid_9_3 grid_9_3	qnn portfolioqaoa	$\frac{459}{615}$	108 132	450 690	$\frac{180}{249}$	$\frac{240}{384}$	53.55 54.22	803	384	$\frac{174}{248}$	-30.73 -35.42
grid_9_3 grid_9_3	random	646	$152 \\ 155$	$\frac{090}{285}$	$\frac{249}{171}$	$\frac{384}{225}$	31.58	455	312	185	-33.42 -40.71
grid_9_3 grid_9_3	portfoliovqe	1145	217	690	$\begin{array}{c} 171 \\ 222 \end{array}$	$\frac{225}{387}$	74.32	951	$\frac{312}{479}$	$\frac{183}{284}$	-40.71 -40.71
$\lim_{5_{-}}$	ghz	12	$\frac{217}{12}$	0	9	$\frac{367}{27}$	200	12	21	15	-28.57
T-0-0111	9	14	14	U	J	41	200	14	21	10	

Table 2: Additional swap gates and circuit depth, $n\,=\,10$

Inne.5.4 graphstate	layout	benchmark	g	d	s basic	s sabre	s look	swap (%)	d basic	d swap	d look	d (%)
line.5.4 wstate	$line_5_4$	dj	79	17	216	21	21	0	94	54	30	-44.44
line.5.4 vgc		graphstate			72	24		137.5	68			-11.11
line.5.4 quo		wstate						nan				-15.56
line.5.4 qft												26.92
line.5.4												-16.98
Ine.5.4 realamprandom 335 57 2160 360 360 7.32 876 278 112 Ine.5.4 su2random 375 61 2160 360 360 10 904 291 116 Ine.5.4 random 459 108 1440 249 327 31.33 657 298 155 Ine.5.4 random 646 155 582 312 435 39.42 708 342 225 Ine.5.4 random 646 155 582 312 435 39.42 708 342 225 Ine.5.4 portfolioqeo 1145 217 2160 360 360 360 12 245 Ine.5.4 portfolioqeo 1145 217 2160 360 360 300 12 21 21 Ine.5.4 portfolioqeo 1145 217 2160 360 360 300 12 21 21 Ine.5.4 portfolioqeo 1145 217 2160 360 360 300 12 21 21 Ine.5.4 portfolioqeo 1145 218 219 218 300 300 12 21 21 Ine.5.4 portfolioqeo 1145 218 218 300 300 12 21 21 Ine.5.4 portfolioqeo 1145 218 218 218 218 Ine.5.4 portfolioqeo 1145 218 218 218 218 Ine.5.4 portfolioqeo 1145 218 218 218 218 Ine.5.4 portfolioqeo 1145 218 218 218 Ine.5.4 portfolioqeo 1145 218 218 218 Ine.5.4 portfolioqeo 168 26 0 9 36 300 12 24 43 Ine.5.2 quas 190 34 120 24 60 150 154 42 48 Ine.5.2 quas 190 34 120 24 60 150 154 42 48 Ine.5.2 quas 190 34 120 24 60 150 154 42 48 Ine.5.2 quas 190 34 120 24 60 150 154 42 48 Ine.5.2 quas 190 34 120 24 60 150 154 42 48 Ine.5.2 quas 190 34 120 24 60 150 23 224 235 Ine.5.2 quas 190 34 120 24 60 150 24 237 238 100 Ine.5.4 quas 190 34 120 24 60 150 24 23 224 Ine.5.0 quas 190 34 120 120 120 24 24 25 Ine.5.1 quas 190 34 120 120 120 120 120 Ine.5.2 quas 190 34 120 120 120 120 120 120 Ine.5.4 quas 190 120 120 120 120 120 120 120 Ine.5.4 quas 120 120		_										-41.44
Inc. 5.4 woolocalrandom 335 57 2160 360 360 10 876 268 112 Inc. 5.4 su2random 375 61 2160 360 366 10 904 291 116 Inc. 5.4 qnn 459 108 1440 249 327 31.33 657 258 155 Inc. 5.4 portfoliogaoa 615 132 2160 360 408 13.33 985 380 176 Inc. 5.4 random 646 155 582 312 483 33.42 708 342 225 Inc. 5.4 portfoliovqe 1145 217 2160 360 408 13.33 1007 402 225 Inc. 5.4 portfoliovqe 1145 217 2160 360 408 13.33 1007 402 225 101 10.2 graphstate 100 23 301 12 30 225 45 229 117 119 10.2 graphstate 103 90 0 12 48 300 90 96 62 119 10.2 40 40 40 40 40 40 40 4												-49.31 -59.71
line 5.4		-										-59.71 -58.21
Inne.5.4												-60.14
line_5.4 portfolioqaoa 615 132 2160 360 408 13.33 985 380 176 line_5.4 random 646 155 582 312 435 39.42 708 342 225 line_5.4 portfolioqe 1145 217 2160 360 408 13.33 1007 402 225 ring_10.2 ghz 12 12 2 0 9 36 300 12 21 11 17 17 78 21 24 14.29 64 43 21 14 14.29 64 43 21 13 12 14 14.29 64 43 21 14 14.29 64 43 21 14 14.29 64 43 21 14 14.29 64 43 21 14 14 14 14 14 14 14 14 14 14 14 14 14<												-39.92
line.5.4												-53.68
line-5.4 portfolioveq 1145 217 2160 360 408 13.33 1007 402 255 ring-10.2 ghz 12 12 10 9 36 300 12 21 17 ring-10.2 qfz 79 17 78 21 24 14-29 64 43 21 ring-10.2 graphstate 100 23 30 12 30 25 45 28 29 11 17 18 21 24 44 43 21 ring-10.2 qst 66 62 66 633.33 26 40 <td></td> <td>_</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-34.21</td>		_										-34.21
ring_10_2 graphstate 100 23 30 12 39 225 45 28 29 11 11 11 11 11 11 11 11 11 11 11 11 11												-36.57
ring_10.2 graphstate 100 23 30 12 39 225 45 28 29 ring_10.2 vege 168 26 0 9 66 633.33 26 40 40 ring_10.2 qaoa 190 34 120 24 60 150 154 42 48 ring_10.2 qftentangled 282 82 330 141 165 17.02 233 205 103 ring_10.2 qftentangled 282 82 330 147 165 12.24 237 239 107 ring_10.2 qftentangled 335 57 885 399 516 29.32 522 351 1215 ring_10.2 qual 459 108 663 288 432 50 440 360 232 ring_10.2 qual 663 182 885 387 594 53.49 606 493	$ring_10_2$	ghz	12	12	0	9	36	300	12	21	17	-19.05
ring_10.2 wstate 163 99 0 12 48 300 99 96 62 ring_10.2 qaoa 190 34 120 24 60 150 154 42 48 ring_10.2 qft 270 78 330 141 165 17.02 233 205 103 ring_10.2 qftentangled 282 82 330 147 165 12.24 237 239 107 ring_10.2 realamprandom 335 57 885 399 516 29.32 522 351 215 ring_10.2 su2random 375 61 885 405 516 27.41 522 402 215 ring_10.2 qnn 459 108 663 288 432 50 440 360 292 ring_10.2 portfolioqao 615 132 885 405 53.49 606 496 292 <td>$ring_10_2$</td> <td></td> <td>79</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>21</td> <td>-51.16</td>	$ring_10_2$		79								21	-51.16
ring 10.2 vqe 168 26 0 9 66 633.33 26 40 40 40 ring 10.2 qaoa 190 34 120 24 60 150 154 42 48 ring 10.2 qftentangled 270 78 330 141 165 17.02 233 205 103 ring 10.2 realamprandom 335 57 885 399 516 29.932 522 351 215 ring 10.2 twolocalrandom 375 61 885 405 516 29.32 522 402 215 ring 10.2 quandom 436 663 288 432 50 440 360 232 151 717 170 18 402 237 381 60.76 493 375 244 717 170 170 171 170 171 170 171 <		graphstate										3.57
ring_10.2 qaoa 190 34 120 24 60 150 154 42 48 ring_10.2 qftentangled 282 82 330 141 165 17.02 233 205 103 ring_10.2 qftentangled 282 82 330 147 165 12.24 237 239 107 ring_10.2 twolocalrandom 335 57 885 399 516 29.32 522 351 215 ring_10.2 su2random 375 61 885 402 537 33.58 513 381 224 ring_10.2 qun 459 108 663 288 432 50 440 360 232 ring_10.2 406 690 292 ring_10.2 portfolioqao 615 121 21 20 337 354 606 493 375 244 210 13 51 91 71 13												-35.42
ring_10.2 qft 270 78 330 141 165 17.02 233 205 103 ring_10.2 qftentangled 282 82 330 147 165 12.24 237 239 107 ring_10.2 twolocalrandom 335 57 885 399 516 29.32 522 351 215 ring_10.2 twolocalrandom 375 61 885 405 516 27.41 522 402 215 ring_10.2 qnn 459 108 663 288 432 50 440 360 232 ring_10.2 random 646 155 402 237 381 60.76 493 375 244 ring_10.2 portfolioqea 1145 217 885 441 636 54.49 606 496 292 ring_17.3 ghz 12 12 0 15 51 240 12												0
ring.10.2 qftentangled 282 82 330 147 165 12.24 237 239 107 ring.10.2 realamprandom 335 57 885 405 516 29.32 522 351 215 ring.10.2 twolocalrandom 375 61 885 405 516 27.41 522 402 215 ring.10.2 qmn 459 108 663 288 432 50 440 360 232 ring.10.2 portfolioqaoa 615 132 885 387 594 53.49 606 496 292 ring.10.2 portfolioqao 616 155 402 237 381 60.76 493 375 244 ring.7.3 gbz 12 12 0 15 51 240 12 22 25 ring.7.3 dj 79 17 126 15 24 60 79 <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>14.29</td></th<>												14.29
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ring_10_2 twolocalrandom 335 57 885 405 516 27.41 522 402 215 ring_10_2 su2random 375 61 885 402 537 33.58 543 381 224 ring_10_2 qun 449 108 663 288 432 50 440 360 232 ring_10_2 portfolioqaoa 615 132 885 387 594 53.49 606 493 375 244 ring_10_2 portfoliovac 1145 217 885 411 636 54.74 636 588 298 ring_7.3 ghz 12 12 0 15 51 240 12 24 25 ring_7.3 ghz 12 12 10 15 51 240 12 24 25 ring_7.3 qft 270 78 540 135 159 17.78 319												-55.23
ring_10.2 su2random 375 61 885 402 537 33,58 543 381 224 ring_10.2 qnm 459 108 663 288 325 50 440 360 232 ring_10.2 random 646 155 402 237 381 60.76 493 375 244 ring_10.2 portfoliovqe 1145 217 885 411 636 54.74 636 588 298 ring_7.3 ghz 12 12 12 0 15 51 240 12 24 25 ring_7.3 ghz 190 34 81 83 116.67 63 33 29 ring_7.3 qaoa 190 34 81 21 75 257.14 158 66 66 76 ring_7.3 qaoa 190 34 81 21 17 255 38 31		_										-38.75 -46.52
ring_10.2 qnn 459 108 663 288 432 50 440 360 232 ring_10.2 portfolioqaoa 615 132 885 387 594 53.49 606 496 292 ring_10.2 portfoliovqe 1145 217 885 411 636 54.74 636 588 298 ring_7.3 gbz 12 12 0 15 51 240 12 24 25 ring_7.3 gbz 12 12 0 15 51 240 12 24 25 ring_7.3 graphstate 100 23 48 18 39 116.67 63 33 29 ring_7.7.3 qft 270 78 540 135 159 17.78 319 188 116 t.horizontal_5.4 dpt 12 12 18 0 21 na 30 12 17												-40.32 -41.21
ring_10_2 random 646 155 402 237 381 60.76 493 375 244 ring_10_2 portfoliovqe 1145 217 885 411 636 54.74 636 588 298 ring_7.3 ghz 12 12 12 0 15 51 240 12 24 25 ring_7.3 dj 79 17 126 15 51 240 12 24 25 ring_7.3 graphstate 100 23 48 18 39 116.67 63 33 29 ring_7.3 qaoa 190 34 81 21 75 257.14 158 64 56 ring_7.3 qft 270 78 540 135 159 17.78 319 188 116 t.horizontal_5.4 dj 79 17 150 21 15 -28.57 88 51 26 t.horizontal_5.4 vqc 168 26 51 0 33 nan 71 26 37 t.horizontal_5.4 qft 270 78 486 162 195 20.37 331 198 106 t.horizontal_5.4 qft 270 78 486 162 195 20.37 331 198 106 t.horizontal_5.4 qft 270 78 486 162 195 20.37 331 198 106 t.horizontal_5.4 qft 270 78 486 162 195 20.37 331 198 106 t.horizontal_5.4 qft 270 78 486 162 195 20.37 331 198 106 t.horizontal_5.4 qft 270 78 486 162 195 20.37 331 198 106 t.horizontal_5.4 qft 270 78 486 162 195 20.37 331 198 106 t.horizontal_5.4 qft 270 78 486 162 195 20.37 331 198 106 t.horizontal_5.4 qft 270 78 486 162 195 20.37 331 198 106 t.horizontal_5.4 qft 270 78 486 162 195 20.37 331 198 106 t.horizontal_5.4 qft 270 78 486 162 195 20.37 331 198 106 t.horizontal_5.4 vqc 168 28 28 25 10 156 195 25 313 225 110 t.horizontal_5.4 value 335 57 1614 366 414 13.11 840 265 143 t.horizontal_5.4 qnn 459 108 1056 249 402 61.45 840 263 143 t.horizontal_5.4 portfolioqoa 615 132 1614 366 414 13.11 840 265 143 t.horizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 t.horizontal_5.4 portfolioqoa 615 132 1614 366 441 20.49 1001 444 276 t.vertical_5.4 portfolioqoa 615 132 1614 366 441 20.49 1001 444 276 t.vertical_5.4 ghz 179 17 135 30 15 -50 85 49 25 t.vertical_5.4 qaoa 190 34 114 27 81 200 196 82 56 t.vertical_5.4 qft 270 78 498 144 195 35.42 273 187 106 t.vertical_5.4 qft 270 78 498 144 195 35.42 273 187 106 t.vertical_5.4 qft 270 78 498 144 195 35.42 273 187 106 t.vertical_5.4 qft 270 78 498 144 195 35.42 273 187 106 t.vertical_5.4 qft 270 78 498 144 195 35.42 273 187 106 t.vertical_5.4 qft entangled 282 82 510 153 195 27.45 309 228 110 t.vertical_5.4 qft entangled 282 85 100 153 195 27.45 309 228 1												-35.56
ring_10_2 random 646 155 402 237 381 60.76 493 375 244 ring_10_2 portfolioqe 1145 217 885 411 636 54.74 636 588 298 ring_7.3 ghz 12 12 0 0 15 51 240 12 24 25 ring_7.3 dj 79 17 126 15 15 24 60 79 35 19 ring_7.3 graphstate 100 23 48 18 39 116.67 63 33 29 ring_7.3 qaoa 190 34 81 21 75 257.14 158 64 56 ring_7.3 qft 270 78 540 135 159 17.78 319 188 116 thorizontal_5.4 ghz 12 12 12 18 0 21 nan 30 12 17 thorizontal_5.4 graphstate 100 23 60 21 nan 30 12 17 thorizontal_5.4 wstate 163 90 45 0 27 nan 116 90 72 thorizontal_5.4 vqc 168 26 51 0 33 nan 71 26 37 thorizontal_5.4 qft 270 78 486 162 195 20.37 331 198 106 thorizontal_5.4 qftentangled 282 82 510 156 195 25 313 225 110 thorizontal_5.4 trealmprandom 375 61 1614 366 414 13.11 840 265 143 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 portfolioque 1145 217 1614 366 441 20.49 1001 444 276 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5.4 qnn 459 108 1056 249 402 61.45 662 258												-41.13
ring_10_2 portfoliovqe 1145 217 885 411 636 54.74 636 588 298 ring_7_3 ghz 12 12 0 15 51 240 12 24 25 ring_7_3 dj 79 17 126 15 24 60 79 35 19 ring_7_3 graphstate 100 23 48 18 39 116.67 63 33 29 ring_7_3 qaoa 190 34 81 21 75 257.14 158 64 56 ring_7_3 qft 270 78 540 135 159 17.78 319 188 116 ring_7_3 qft 270 78 540 135 159 17.78 319 188 116 ring_7_3 qft 10 23 60 21 15 28.57 88 51 26												-34.93
ring.7.3 dj 79 17 126 15 24 60 79 35 19 ring.7.3 graphstate 100 23 48 18 39 116.67 63 33 29 ring.7.3 qaoa 190 34 81 21 75 257.14 158 64 56 ring.7.3 qtt 270 78 540 135 159 17.78 319 188 116 thorizontal.5.4 ghz 12 12 18 0 21 nan 30 12 17 thorizontal.5.4 graphstate 100 23 60 21 nan 30 12 17 thorizontal.5.4 graphstate 100 23 60 21 36 71.43 66 38 23 thorizontal.5.4 wstate 163 90 45 0 27 nan 116 90 72 thorizontal.5.4 qaoa 190 34 129 21 78 271.43 206 50 50 thorizontal.5.4 qft 270 78 486 162 195 20.37 331 198 106 thorizontal.5.4 qft 270 78 486 162 195 20.37 331 198 106 thorizontal.5.4 realamprandom 335 57 1614 363 414 14.05 840 263 143 thorizontal.5.4 su2random 375 61 1614 363 414 14.05 840 263 143 thorizontal.5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal.5.4 portfolioqaoa 615 132 1614 366 441 13.11 840 265 143 thorizontal.5.4 portfolioqaoa 615 132 1614 366 441 13.11 840 265 143 thorizontal.5.4 portfolioqaoa 615 132 1614 366 441 12.9 868 292 147 thorizontal.5.4 portfolioqaoa 615 132 1614 366 441 12.9 868 292 147 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 portfolioqaoa 615 132 1614 366 441 20.49 1001 444 276 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 27 38 20 40 47.25		portfoliovqe		217	885		636	54.74	636	588	298	-49.32
ring.7.3 graphstate 100 23 48 18 39 116.67 63 33 29 ring.7.3 qaoa 190 34 81 21 75 257.14 158 64 56 ring.7.3 qft 270 78 540 135 159 17.78 319 188 116 thorizontal.5.4 ghz 12 12 18 0 21 nan 30 12 17 thorizontal.5.4 dj 79 17 150 21 15 -28.57 88 51 26 thorizontal.5.4 vge 168 26 51 0 33 nan 71 26 37 thorizontal.5.4 qft 270 78 486 162 195 20.37 331 198 106 thorizontal.5.4 qft 270 78 486 162 195 20.37 331 198 106 thorizontal.5.4 qft 100 23 60 27 nan 116 90 72 thorizontal.5.4 qft 270 78 486 162 195 20.37 331 198 106 thorizontal.5.4 qft 335 57 1614 363 414 14.05 840 263 143 thorizontal.5.4 realamprandom 335 57 1614 366 414 13.11 840 265 143 thorizontal.5.4 qun 459 108 1056 249 402 61.45 662 258 194 thorizontal.5.4 portfolioqoa 615 132 1614 366 441 11.29 868 292 147 thorizontal.5.4 portfolioqoa 615 132 1614 366 441 10.29 47.25 660 419 231 thorizontal.5.4 portfolioqoa 615 132 1614 366 441 10.29 47.25 660 419 231 thorizontal.5.4 portfolioqoa 615 132 1614 366 441 20.49 1001 444 276 thorizontal.5.4 portfolioqoa 615 132 1614 366 441 20.49 1001 444 276 thorizontal.5.4 portfolioqoa 615 132 1614 366 441 20.49 1001 444 276 thorizontal.5.4 portfolioqoa 615 132 1614 366 441 20.49 1001 444 276 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizontal.5.4 ghz 12 12 12 27 9 30 233.33 39 18 19 thorizon	$ring_{-}7_{-}3$	ghz	12	12	0	15	51	240	12	24	25	4.17
ring_7_3 qaoa 190 34 81 21 75 257.14 158 64 56 ring_7_3 qft 270 78 540 135 159 17.78 319 188 116 t_horizontal_5_4 gbz 12 12 18 0 21 nan 30 12 17 t_horizontal_5_4 dj 79 17 150 21 15 -28.57 88 51 26 t_horizontal_5_4 graphstate 100 23 60 21 36 71.43 66 38 23 t_horizontal_5_4 wstate 163 90 45 0 27 nan 116 90 72 t_horizontal_5_4 qft 260 51 0 33 nan 71 26 37 t_horizontal_5_4 qft 270 78 486 162 195 20.37 331 198 106	$ring_{-}7_{-}3$	dj	79	17	126	15	24	60	79	35	19	-45.71
ring_7_3 qft 270 78 540 135 159 17.78 319 188 116 thorizontal_5_4 ghz 12 12 18 0 21 nan 30 12 17 thorizontal_5_4 dj 79 17 150 21 15 -28.57 88 51 26 thorizontal_5_4 with the properties of the p	$\operatorname{ring}_{-7}_{-3}$	graphstate	100									-12.12
t.horizontal.5.4 dj 79 17 150 21 18 0 21 nan 30 12 17 thorizontal.5.4 dj 79 17 150 21 15 -28.57 88 51 26 thorizontal.5.4 graphstate 100 23 60 21 36 71.43 66 38 23 thorizontal.5.4 vqe 168 26 51 0 27 nan 116 90 72 thorizontal.5.4 vqe 168 26 51 0 33 nan 71 26 37 thorizontal.5.4 qdaoa 190 34 129 21 78 271.43 206 50 50 thorizontal.5.4 qft 270 78 486 162 195 20.37 331 198 106 thorizontal.5.4 qft 270 78 486 162 195 20.37 331 198 106 thorizontal.5.4 two declarandom 335 57 1614 363 414 14.05 840 263 143 thorizontal.5.4 two localrandom 335 57 1614 366 414 13.11 840 265 143 thorizontal.5.4 gun 459 108 1056 249 402 61.45 662 258 194 thorizontal.5.4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal.5.4 portfolioqaoa 615 132 1614 366 441 20.49 1001 444 276 thorizontal.5.4 graphstate 100 23 63 21 39 85.71 76 34 24 therizontal.5.4 dj 79 17 135 30 15 -50 85 49 25 therical.5.4 graphstate 100 23 63 21 39 85.71 76 34 24 therizontal.5.4 graphstate 100 23 63 21 39 85.71 76 34 24 therical.5.4 graphstate 100 23 63 21 39 85.71 76 34 24 therical.5.4 qaoa 190 34 114 27 81 200 196 82 56 therical.5.4 qft 270 78 498 144 195 35.42 273 187 106 therical.5.4 qft 270 78 498 144 195 35.42 273 187 106 therical.5.4 qft 270 78 498 144 195 35.42 273 187 106 therical.5.4 qft 270 78 498 144 195 35.42 273 187 106 therical.5.4 qft 270 78 498 144 195 35.42 273 309 228 110 therical.5.4 qft 282 82 510 153 195 27.45 309 228 110 therical.5.4 qftentangled 282 82 510 153 195 27.45 309 228 110 therical.5.4 qftentangled 282 82 510 153 195 27.45 309 228 110 therical.5.4 qftentangled 282 82 510 153 195 27.45 309 228 110 therical.5.4 qftentangled 282 82 510 153 195 27.45 309 228 110 therical.5.4 qftentangled 282 82 510 153 195 27.45 309 228 110 therical.5.4 qftentangled 282 82 510 153 195 27.45 309 228 110 therical.5.4 qftentangled 282 82 510 153 195 27.45 309 228 110 therical.5.4 qftentangled 282 82 510 153 195 27.45 309 228 110 therical.5.4 therical.5.4 qftentangled 282 82 510 153 195 27.45 309 228 110 therical.5.4 therical.5.4 qftentangled 282 82 510 153 195	~											-12.5
t_horizontal_5_4 dj												-38.3
t_horizontal_5_4 graphstate 100 23 60 21 36 71.43 66 38 23 t_horizontal_5_4 wstate 163 90 45 0 27 nan 116 90 72 t_horizontal_5_4 vqe 168 26 51 0 33 nan 71 26 37 t_horizontal_5_4 qaoa 190 34 129 21 78 271.43 206 50 50 t_horizontal_5_4 qft 270 78 486 162 195 20.37 331 198 106 t_horizontal_5_4 qftentangled 282 82 510 156 195 25 313 225 110 t_horizontal_5_4 realamprandom 335 57 1614 363 414 14.05 840 263 143 t_horizontal_5_4 twolocalrandom 335 57 1614 366 414 13.11 840 265 143 t_horizontal_5_4 su2random 375 61 1614 372 414 11.29 868 292 147 t_horizontal_5_4 qnn 459 108 1056 249 402 61.45 662 258 194 t_horizontal_5_4 portfolioqaoa 615 132 1614 366 489 33.61 979 367 238 t_horizontal_5_4 random 646 155 522 273 402 47.25 660 419 231 t_horizontal_5_4 ghz 12 12 27 9 30 233.33 39 18 19 t_vertical_5_4 dj 79 17 135 30 15 -50 85 49 25 t_vertical_5_4 wstate 163 90 72 0 45 nan 137 90 66 t_vertical_5_4 qaoa 190 34 114 27 81 200 196 82 56 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qftentangled 282 82 510 153 195 27.45 309 228 110 t_vertical_5_4 qftentangled 282 82 510 153 195 27.45 309 228 110 t_vertical_5_4 qftentangled 282 82 510 153 195 27.45 309 228 110 t_vertical_5_4 qftentangled 282 82 510 153 175 27.45 309 228 110 t_vertical_5_4 qftentangled 282 82 510 153 175 27.45 309 228 110 t_vertical_5_4 qftentangled 282 82 510 153 175 27.45 309 228 110 t_vertical_5_4 qftentangled 282 82 510 153 175 27.45 309 228 110 t_vertical_5_4 qftentangled 282 82 510 153 175 27.45 309 228 110 t_vertical_5_4 qftentangled 282 82 510 153 175 27.45 309 228 110 t_vertical_5_4 qftentangled 282 82 510 153 175 27.45 309 228 110 t_vertical_5_4 qftentangled 282 82 510 153 175 27.45 309 228 110 t_vertical_5_4 qftentangled 282 82 510 153 175 27.45 309 228 110 t_vertical_5_4 qftentangled 282 82 510 153 175 27.4		~										41.67
t_horizontal_5_4		=										-49.02
t_horizontal_5_4 vqe		~ -										-39.47 -20
t_horizontal_5_4 qaoa 190 34 129 21 78 271.43 206 50 50 t_horizontal_5_4 qft 270 78 486 162 195 20.37 331 198 106 t_horizontal_5_4 qftentangled 282 82 510 156 195 25 313 225 110 t_horizontal_5_4 realamprandom 335 57 1614 363 414 14.05 840 263 143 t_horizontal_5_4 twolocalrandom 335 57 1614 366 414 13.11 840 265 143 t_horizontal_5_4 su2random 375 61 1614 372 414 11.29 868 292 147 t_horizontal_5_4 qnn 459 108 1056 249 402 61.45 662 258 194 t_horizontal_5_4 portfolioqaoa 615 132 1614 366 489 33.61 979 367 238 t_horizontal_5_4 random 646 155 522 273 402 47.25 660 419 231 t_horizontal_5_4 portfolioqe 1145 217 1614 366 441 20.49 1001 444 276 t_vertical_5_4 ghz 12 12 27 9 30 233.33 39 18 19 t_vertical_5_4 graphstate 100 23 63 21 39 85.71 76 34 24 t_vertical_5_4 wstate 163 90 72 0 45 nan 137 90 66 t_vertical_5_4 qaoa 190 34 114 27 81 200 196 82 56 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qftentangled 282 82 510 153 195 27.45 309 228 110 t_vertical_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154												42.31
t_horizontal_5_4 qft 270 78 486 162 195 20.37 331 198 106 t_horizontal_5_4 qftentangled 282 82 510 156 195 25 313 225 110 t_horizontal_5_4 realamprandom 335 57 1614 363 414 14.05 840 263 143 t_horizontal_5_4 twolocalrandom 335 57 1614 366 414 13.11 840 265 143 t_horizontal_5_4 su2random 375 61 1614 372 414 11.29 868 292 147 t_horizontal_5_4 qnn 459 108 1056 249 402 61.45 662 258 194 t_horizontal_5_4 portfolioqaoa 615 132 1614 366 489 33.61 979 367 238 t_horizontal_5_4 random 646 155 522 273 402 47.25 660 419 231 t_horizontal_5_4 portfoliovqe 1145 217 1614 366 441 20.49 1001 444 276 t_vertical_5_4 ghz 12 12 27 9 30 233.33 39 18 19 t_vertical_5_4 graphstate 100 23 63 21 39 85.71 76 34 24 t_vertical_5_4 graphstate 100 23 63 21 39 85.71 76 34 24 t_vertical_5_4 qaoa 190 34 114 27 81 200 196 82 56 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qftentangled 282 82 510 153 195 27.45 309 228 110 t_vertical_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154												$\frac{42.31}{0}$
t_horizontal_5_4 qftentangled 282 82 510 156 195 25 313 225 110 thorizontal_5_4 realamprandom 335 57 1614 363 414 14.05 840 263 143 thorizontal_5_4 twolocalrandom 335 57 1614 366 414 13.11 840 265 143 thorizontal_5_4 su2random 375 61 1614 372 414 11.29 868 292 147 thorizontal_5_4 qnn 459 108 1056 249 402 61.45 662 258 194 thorizontal_5_4 portfolioqaoa 615 132 1614 366 489 33.61 979 367 238 thorizontal_5_4 random 646 155 522 273 402 47.25 660 419 231 thorizontal_5_4 portfoliovqe 1145 217 1614 366 441 20.49 1001 444 276 thorizontal_5_4 ghz 12 12 27 9 30 233.33 39 18 19 thorizontal_5_4 dj 79 17 135 30 15 -50 85 49 25 theorical_5_4 graphstate 100 23 63 21 39 85.71 76 34 24 theorical_5_4 wstate 163 90 72 0 45 nan 137 90 66 theorical_5_4 qaoa 190 34 114 27 81 200 196 82 56 theorical_5_4 qft 270 78 498 144 195 35.42 273 187 106 theorical_5_4 qftentangled 282 82 510 153 195 27.45 309 228 110 theorical_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154 theorical_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154 theorical_5_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154 theorical_5_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154 theorical_5_5_4 realamprandom 335 57 1515 378 447 18.25												-46.46
t_horizontal_5_4 realamprandom 335 57 1614 363 414 14.05 840 263 143 - t_horizontal_5_4 twolocalrandom 335 57 1614 366 414 13.11 840 265 143 - t_horizontal_5_4 su2random 375 61 1614 372 414 11.29 868 292 147 - t_horizontal_5_4 qnn 459 108 1056 249 402 61.45 662 258 194 - t_horizontal_5_4 portfolioqaoa 615 132 1614 366 489 33.61 979 367 238 - t_horizontal_5_4 random 646 155 522 273 402 47.25 660 419 231 - t_horizontal_5_4 portfoliovqe 1145 217 1614 366 441 20.49 1001 444 276 - t_vertical_5_4 ghz 12 12 12 27 9 30 233.33 39 18 19 - t_vertical_5_4 dj 79 17 135 30 15 -50 85 49 25 - t_vertical_5_4 graphstate 100 23 63 21 39 85.71 76 34 24 - t_vertical_5_4 wstate 163 90 72 0 45 nan 137 90 66 - t_vertical_5_4 qaoa 190 34 114 27 81 200 196 82 56 - t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 - t_vertical_5_4 qftentangled 282 82 510 153 195 27.45 309 228 110 - t_vertical_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154		-										-51.11
t_horizontal_5_4 twolocalrandom 335 57 1614 366 414 13.11 840 265 143 t_horizontal_5_4 su2random 375 61 1614 372 414 11.29 868 292 147 t_horizontal_5_4 qnn 459 108 1056 249 402 61.45 662 258 194 t_horizontal_5_4 portfolioqaoa 615 132 1614 366 489 33.61 979 367 238 t_horizontal_5_4 random 646 155 522 273 402 47.25 660 419 231 t_horizontal_5_4 portfolioqae 1145 217 1614 366 441 20.49 1001 444 276 t_vertical_5_4 ghz 12 12 12 27 9 30 233.33 39 18 19 t_vertical_5_4 dj 79 17 135 30 15 -50 85 49 25 t_vertical_5_4 graphstate 100 23 63 21 39 85.71 76 34 24 t_vertical_5_4 wstate 163 90 72 0 45 nan 137 90 66 t_vertical_5_4 qaoa 190 34 114 27 81 200 196 82 56 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154												-45.63
t_horizontal_5_4 qnn												-46.04
t_horizontal_5_4 portfolioqaoa 615 132 1614 366 489 33.61 979 367 238 t_horizontal_5_4 random 646 155 522 273 402 47.25 660 419 231 t_horizontal_5_4 portfoliovqe 1145 217 1614 366 441 20.49 1001 444 276 t_vertical_5_4 ghz 12 12 27 9 30 233.33 39 18 19 t_vertical_5_4 dj 79 17 135 30 15 -50 85 49 25 t_vertical_5_4 graphstate 100 23 63 21 39 85.71 76 34 24 t_vertical_5_4 wstate 163 90 72 0 45 nan 137 90 66 t_vertical_5_4 vqe 168 26 66 3 51 1600 73 35 38 t_vertical_5_4 qaoa 190 34 114 27 81 200 196 82 56 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qftentangled 282 82 510 153 195 27.45 309 228 110 t_vertical_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154	$t_{\text{horizontal}_5_4}$	su2random	375	61	1614	372	414	11.29	868	292	147	-49.66
t_horizontal_5_4 random 646 155 522 273 402 47.25 660 419 231 t_horizontal_5_4 portfoliovqe 1145 217 1614 366 441 20.49 1001 444 276 t_vertical_5_4 ghz 12 12 27 9 30 233.33 39 18 19 t_vertical_5_4 dj 79 17 135 30 15 -50 85 49 25 t_vertical_5_4 graphstate 100 23 63 21 39 85.71 76 34 24 t_vertical_5_4 wstate 163 90 72 0 45 nan 137 90 66 t_vertical_5_4 vqe 168 26 66 3 51 1600 73 35 38 t_vertical_5_4 qaoa 190 34 114 27 81 200 196 82 56 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qftentangled 282 82 510 153 195 27.45 309 228 110 t_vertical_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154	$t_horizontal_5_4$	qnn	459	108	1056	249	402	61.45	662	258	194	-24.81
t_borizontal_5_4 portfoliovqe	$t_horizontal_5_4$	_										-35.15
t_vertical_5_4 ghz 12 12 27 9 30 233.33 39 18 19 t_vertical_5_4 dj 79 17 135 30 15 -50 85 49 25 t_vertical_5_4 graphstate 100 23 63 21 39 85.71 76 34 24 t_vertical_5_4 wstate 163 90 72 0 45 nan 137 90 66 t_vertical_5_4 vqe 168 26 66 3 51 1600 73 35 38 t_vertical_5_4 qaoa 190 34 114 27 81 200 196 82 56 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qftentangled 282 82 510 153 195 27.45 309 228 110 t_vertical_5_4 realamprandom 335 57 1515 378												-44.87
t_vertical_5_4 dj 79 17 135 30 15 -50 85 49 25 t_vertical_5_4 graphstate 100 23 63 21 39 85.71 76 34 24 t_vertical_5_4 wstate 163 90 72 0 45 nan 137 90 66 t_vertical_5_4 vqe 168 26 66 3 51 1600 73 35 38 t_vertical_5_4 qaoa 190 34 114 27 81 200 196 82 56 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qftentangled 282 82 510 153 195 27.45 309 228 110 t_vertical_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154												-37.84
t_vertical_5_4 graphstate 100 23 63 21 39 85.71 76 34 24 t_vertical_5_4 wstate 163 90 72 0 45 nan 137 90 66 t_vertical_5_4 vqe 168 26 66 3 51 1600 73 35 38 t_vertical_5_4 qaoa 190 34 114 27 81 200 196 82 56 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qftentangled 282 82 510 153 195 27.45 309 228 110 t_vertical_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154		_										5.56
t_vertical_5_4		*										-48.98
t_vertical_5_4 vqe 168 26 66 3 51 1600 73 35 38 73 35 38 74		~ -										-29.41
t_vertical_5_4 qaoa 190 34 114 27 81 200 196 82 56 t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qftentangled 282 82 510 153 195 27.45 309 228 110 t_vertical_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154												-26.67 8.57
t_vertical_5_4 qft 270 78 498 144 195 35.42 273 187 106 t_vertical_5_4 qftentangled 282 82 510 153 195 27.45 309 228 110 t_vertical_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154 t_vertical_5_4 realamprandom 335 57 1515 378 447 18.25												8.57 -31.71
t_vertical_5_4 qftentangled 282 82 510 153 195 27.45 309 228 110 t_vertical_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154												-31.71 -43.32
t_vertical_5_4 realamprandom 335 57 1515 378 447 18.25 835 243 154		-										-43.32 -51.75
												-36.63
- b_vclbbcal_g_+ bw0.0callab0.0H ada at fata 42a 44f a.tif 5aa 504 fat	t_vertical_5_4	twolocalrandom	335	57	1515	423	447	5.67	835	304	154	-49.34
												-48.39
												-32.89

Table 2: Additional swap gates and circuit depth, $n\,=\,10$

layout	benchmark	g	d	s basic	s sabre	s look	swap (%)	d basic	d swap	d look	d (%)
$t_{vertical_5_4}$	portfolioqaoa	615	132	1515	396	504	27.27	976	462	255	-44.81
$t_{vertical_5_4}$	random	646	155	525	246	381	54.88	710	351	228	-35.04
$t_{\text{vertical}}_{-5}_{-4}$	portfoliovqe	1145	217	1515	396	507	28.03	997	536	282	-47.39

Table 3: Additional swap gates and circuit depth, $n\,=\,15$

layout	benchmark	g	d	s basic	s sabre	s look	swap (%)	d basic	d swap	d look	d (%)
full_10_2	ghz	17	17	0	6	0	-100	17	20	17	-15
full_10_2	dj	118	22	66	9	9	0	95	33	29	-12.12
full_10_2	graphstate	150	29	30	6	24	300	51	40	34	-15
full_10_2	vqe	253	31	0	6	0	-100	31	41	31	-24.39
full_10_2	wstate	253	135	0	12	0	-100	135	141	135	-4.26
$full_10_2$	qaoa	285	34	63	6	69	1050	164	50	65	30
$full_10_2$	qft	591	118	378	48	321	568.75	485	307	241	-21.5
$full_10_2$	qftentangled	608	122	378	72	321	345.83	489	329	245	-25.53
$full_10_2$	real amprandom	615	77	1146	177	315	77.97	1399	372	210	-43.55
$full_10_2$	two local random	615	77	1146	138	315	128.26	1399	327	210	-35.78
$full_10_2$	su2random	675	81	1146	189	315	66.67	1433	452	215	-52.43
$full_10_2$	qnn	914	158	720	90	369	310	1103	527	302	-42.69
$full_10_2$	portfolioqaoa	1260	192	1146	141	393	178.72	1766	777	351	-54.83
full_10_2	random	1992	412	534	246	597	142.68	1200	957	529	-44.72
full_10_2	portfoliovqe	2505	327	1146	189	534	182.54	1903	984	504	-48.78
full_7_3	ghz	17	17	0	6	0	-100	17	20	17	-15
full_7_3	dj	118	22	96	9	15	66.67	116	36	30	-16.67
full_7_3 full_7_3	graphstate	$\frac{150}{253}$	29 31	36	9 12	27 0	200 -100	67 31	35 56	32 31	-8.57 -44.64
full_7_3 full_7_3	$egin{array}{c} { m vqe} \\ { m wstate} \end{array}$	$\frac{253}{253}$	$\frac{31}{135}$	$0 \\ 0$	12	0	-100 -100	135	56 141	$\frac{31}{135}$	-44.64 -4.26
full_7_3	qaoa	$\frac{255}{285}$	$\frac{133}{34}$	108	15	51	240	$\frac{133}{223}$	50	133 53	-4.20 6
grid_4_5	ghz	17	17	12	18	33	83.33	29	32	25	-21.88
grid_4_5 grid_4_5	dj	118	22	324	45	27	-40	128	75	38	-49.33
grid_4_5	graphstate	150	29	147	24	111	362.5	94	31	38	22.58
grid_4_5	vqe	253	31	48	12	78	550	75	60	49	-18.33
grid_4_5	wstate	253	135	39	3	57	1800	147	138	102	-26.09
$grid_4_5$	qaoa	285	34	357	39	141	261.54	369	58	70	20.69
grid_4_5	qft	591	118	1698	312	525	68.27	734	324	214	-33.95
grid_4_5	qftentangled	608	122	1575	300	561	87	687	315	223	-29.21
$grid_4_5$	realamprandom	615	77	5277	645	759	17.67	1840	412	198	-51.94
$grid_4_5$	two local random	615	77	5277	696	759	9.05	1840	446	198	-55.61
$\operatorname{grid}_{-4}_{-5}$	su2random	675	81	5277	672	759	12.95	1881	422	202	-52.13
$grid_{-}4_{-}5$	qnn	914	158	3384	447	858	91.95	1386	414	355	-14.25
$grid_4_5$	portfolioqaoa	1260	192	5277	663	1170	76.47	2077	585	418	-28.55
$grid_4_5$	random	1992	412	2250	1041	1533	47.26	2103	1056	629	-40.44
grid_4_5	portfoliovqe	2505	327	5277	648	768	18.52	2244	756	412	-45.5
grid_9_3	ghz	17	17	18	9	42	366.67	35	20	25	25
grid_9_3	dj	118	22	234	48	24	-50	122	67	34	-49.25
grid_9_3	graphstate	150	29 31	108 48	30	87 cc	190 633.33	86 60	$\begin{array}{c} 38 \\ 45 \end{array}$	33 47	-13.16 4.44
grid_9_3 grid_9_3	$egin{array}{c} { m vqe} \\ { m wstate} \end{array}$	$253 \\ 253$	$\frac{31}{135}$	46 57	9 18	66 72	055.55 300	156	$\frac{45}{147}$	$\frac{47}{107}$	-27.21
grid_9_3 grid_9_3	qaoa	$\frac{233}{285}$	$\frac{133}{34}$	198	36	243	500 575	$\frac{130}{247}$	51	71	39.22
grid_9_3	qaoa qft	591	118	1164	270	450	66.67	680	292	203	-30.48
grid_9_3	qftentangled	608	122	1128	279	357	27.96	650	$\frac{232}{327}$	192	-41.28
grid_9_3	realamprandom	615	77	3018	666	834	25.23	1603	439	240	-45.33
grid_9_3	twolocalrandom	615	77	3018	672	834	24.11	1603	453	240	-47.02
$grid_9_3$	su2random	675	81	3018	672	831	23.66	1641	489	242	-50.51
grid_9_3	qnn	914	158	2061	444	771	73.65	1277	456	343	-24.78
grid_9_3	portfolioqaoa	1260	192	3018	663	1074	61.99	1843	655	412	-37.1
$grid_9_3$	random	1992	412	1647	783	1140	45.59	1913	1177	576	-51.06
$grid_9_3$	portfoliovqe	2505	327	3018	636	1107	74.06	2112	835	471	-43.59
$line_5_4$	ghz	17	17	0	12	42	250	17	23	20	-13.04
$line_5_4$	dj	118	22	546	66	36	-45.45	146	102	45	-55.88
$line_5_4$	graphstate	150	29	186	36	138	283.33	95	33	49	48.48
$line_5_4$	vqe	253	31	0	69	42	-39.13	31	83	43	-48.19
$line_5_4$	wstate	253	135	0	0	42	nan	135	135	121	-10.37
line_5_4	qaoa	285	34	438	75	210	180	391	56	71	26.79
line_5_4	qft	591	118	2877	426	519	21.83	742	316	170	-46.2
line_5_4	qftentangled	608	122	2877	414	543	31.16	746	311	177	-43.09
$line_{-}5_{-}4$ $line_{-}5_{-}4$	realamprandom	615	77 77	8190 8190	888 876	936 936	$5.41 \\ 6.85$	1996 1996	418 416	$\frac{162}{162}$	-61.24 -61.06
	twolocal random	615									

Table 3: Additional swap gates and circuit depth, $n\,=\,15$

layout	benchmark	ď	d	s basic	s sabre	s look	swap (%)	d basic	d swap	d look	d (%)
line_5_4	su2random	675	81	8190	897	936	4.35	2039	461	165	-64.21
line_5_4	qnn	914	158	5460	591	732	23.86	1442	431	$\frac{105}{234}$	-04.21 -45.71
line_5_4	portfolioqaoa	1260	192	8190	888	948	6.76	2165	531	260	-51.04
$line_{-5}$ 4	random	1992	412	3348	1623	1926	18.67	2915	1128	656	-41.84
$line_{-5}$ 4	portfoliovqe	2505	327	8190	891	948	6.4	2297	695	378	-45.61
$ring_10_2$	ghz	17	17	0	21	111	428.57	17	26	40	53.85
$ring_10_2$	dj	118	22	336	33	60	81.82	122	71	28	-60.56
$ring_10_2$	graphstate	150	29	111	27	108	300	84	32	31	-3.12
$ring_10_2$	vqe	253	31	0	33	192	481.82	31	63	59	-6.35
$ring_10_2$	wstate	253	135	0	15	177	1080	135	138	78	-43.48
$ring_10_2$	qaoa	285	34	291	36	141	291.67	303	54	60	11.11
ring_10_2	qft	591	118	2034	384	504	31.25	707	389	186	-52.19
ring_10_2	qftentangled	608	122	2034	360	624	73.33	711	344	216	-37.21
ring_10_2	realamprandom	615	77	5427	1155	1332	15.32	1879	565	302	-46.55
ring_10_2 ring_10_2	twolocalrandom su2random	$615 \\ 675$	77 81	$5427 \\ 5427$	$1131 \\ 1155$	$1332 \\ 1338$	17.77 15.84	$1879 \\ 1922$	601 661	$\frac{302}{305}$	-49.75 -53.86
ring_10_2	qnn	914	158	3576	708	1116	57.63	1356	558	349	-37.46
ring_10_2	portfolioqaoa	1260	192	5427	1065	1701	59.72	2060	793	534	-32.66
ring_10_2	random	1992	412	2127	1050	1407	34	2042	1129	580	-48.63
ring_10_2	portfoliovge	2505	327	5427	1098	1590	44.81	2195	1030	520	-49.51
$ring_5_4$	ghz	17	17	0	27	51	88.89	17	41	30	-26.83
$ring_5_4$	$\ddot{ ext{d}} ext{j}$	118	22	153	36	27	-25	113	71	33	-53.52
$ring_5_4$	graphstate	150	29	78	18	102	466.67	72	38	32	-15.79
$\operatorname{ring}_{-}5_{-}4$	vqe	253	31	0	39	63	61.54	31	76	44	-42.11
$ring_5_4$	wstate	253	135	0	48	72	50	135	150	79	-47.33
$ring_5_4$	qaoa	285	34	171	51	93	82.35	250	83	43	-48.19
$ring_{-7}_{-3}$	ghz	17	17	0	18	84	366.67	17	32	28	-12.5
ring_7_3	dj	118	22	168	39	42	7.69	116	66	29	-56.06
ring_7_3	graphstate	$\frac{150}{253}$	29 31	84	24 24	96 138	300 475	85 31	43 63	35 53	-18.6
ring_7_3 ring_7_3	vqe wstate	$\frac{253}{253}$	135	$0 \\ 0$	24 15	108	473 620	135	05 144	55 81	-15.87 -43.75
ring_7_3	qaoa	$\frac{233}{285}$	$\frac{133}{34}$	$\frac{0}{228}$	51	177	247.06	$\frac{133}{267}$	76	71	-45.75 -6.58
ring_7_3	realamprandom	615	77	2679	999	1224	247.00 22.52	1444	740	319	-56.89
ring_7_3	twolocalrandom	615	77	2679	882	1224	38.78	1444	595	319	-46.39
t_horizontal_5_4	ghz	17	17	27	39	39	0	44	53	28	-47.17
$t_{horizontal_5_4}$	$\ddot{\mathrm{d}}\mathrm{j}$	118	22	384	42	27	-35.71	137	65	40	-38.46
$t_{borizontal_5_4}$	graphstate	150	29	147	42	147	250	96	37	45	21.62
$t_{nizontal_5_4}$	vqe	253	31	63	6	54	800	79	34	47	38.24
$t_{-}horizontal_{-}5_{-}4$	wstate	253	135	63	21	45	114.29	166	141	111	-21.28
t_{-} horizontal_5_4	qaoa	285	34	348	54	234	333.33	337	56	67	19.64
t_{-} horizontal_5_4	qft	591	118	1842	381	519	36.22	729	309	170	-44.98
t_horizontal_5_4	qftentangled	608	122	1788	390	543	39.23	698	320	177	-44.69
t_horizontal_5_4	realamprandom	615	77	5859	885	1020	15.25	1927	446	234	-47.53
t_horizontal_5_4 t_horizontal_5_4	twolocalrandom su2random	$615 \\ 675$	77 81	$5859 \\ 5859$	876 993	$1020 \\ 1020$	16.44 2.72	1927 1970	$\frac{424}{538}$	$234 \\ 237$	-44.81 -55.95
t_horizontal_5_4	qnn	914	158	4041	993 606	1020 1065	75.74	1458	481	25 <i>1</i> 355	-55.95 -26.2
t_horizontal_5_4	portfolioqaoa	1260	192	5859	822	1359	65.33	2156	636	420	-33.96
t_horizontal_5_4	random	1992	412	2613	1407	1815	29	2408	1130	644	-43.01
t_horizontal_5_4	portfoliovqe	2505	327	5859	975	1047	7.38	2288	893	431	-51.74
t_vertical_5_4	ghz	17	17	45	51	54	5.88	62	59	29	-50.85
$t_{vertical_5_4}$	dj	118	22	318	48	27	-43.75	131	69	38	-44.93
$t_{\text{vertical}}_{5}_{4}$	graphstate	150	29	150	30	138	360	107	35	41	17.14
$t_{\text{-}}vertical_{\text{-}}5_{\text{-}}4$	vqe	253	31	150	12	99	725	94	54	48	-11.11
$t_{vertical_5_4}$	wstate	253	135	126	45	84	86.67	200	153	97	-36.6
$t_{vertical_5_4}$	qaoa	285	34	336	63	234	271.43	351	62	89	43.55
$t_{vertical_5_4}$	qft	591	118	1680	396	615	55.3	642	352	222	-36.93
t_vertical_5_4	qftentangled	608	122	1764	411	621	51.09	653	393	234	-40.46
t_vertical_5_4	realamprandom	615	77	5304	1047	1098	4.87	1919	564	261	-53.72
t_vertical_5_4	twolocalrandom	615	77	5304	1011	1098	8.61	1919	593	261	-55.99
t_vertical_5_4	su2random	675	81	5304	1086	1098	1.1	1962	658	265	-59.73
t_vertical_5_4	qnn	914	158	3669	600	1077	79.5	1449	509	344	-32.42

Table 3: Additional swap gates and circuit depth, $n\,=\,15$

layout	benchmark	g	d	s basic	s sabre	s look	swap (%)	d basic	d swap	d look	d (%)
t_vertical_5_4	portfolioqaoa	1260	192	5304	879	1440	63.82	2150	641	430	-32.92
t_vertical_5_4 t_vertical_5_4	random portfoliovqe	$1992 \\ 2505$	$\frac{412}{327}$	$2475 \\ 5304$	$1203 \\ 942$	$1800 \\ 1251$	49.63 32.8	$2366 \\ 2280$	1214 834	$658 \\ 456$	-45.8 -45.32