Simulation Results steps

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1 Simplest benchmarks results

Table 1: Benchmarks used

Benchmark	# qubits	# gates
$4gt11_{82}$	5	27
$4gt12_{v189}$	6	228
$4gt4_{v072}$	6	258
$4mod5_{bdd287}$	7	70
$4mod5_{v020}$	5	20
alu_{bdd288}	7	84
alu_{v027}	5	36
$decod24_{bdd294}$	6	73
$mod10_{176}$	5	178
$mod5adder_{127}$	6	555
$mod5d1_{63}$	5	22
$mod8_{10177}$	6	440
$one_{twothreev199}$	5	132
$one_{twothreev3101}$	5	70
$rd32_{v066}$	4	34
sf_{274}	6	781
sf_{276}	6	778
$sym6_{145}$	7	3888

1.1 $4gt11_{82}$

Table 2: Step 1 results after 1000 iterations

Mapper	# qubits	depth	# gates	# SWAPS	t_1	t_2	meas. err.	p. success	f	
No	5	78	84	0	3000	3000	0.03	0.96	0.97823066	3
minextendrc	7	226	237	17	3000	3000	0.03	0.929	0.92937318	15
minextendrc	6	173	174	10	3000	3000	0.03	0.939	0.94685216	10
minextend	8	158	228	16	3000	3000	0.03	0.947	0.9312172	12
minextend	6	139	165	9	3000	3000	0.03	0.949	0.94748374	8
base	6	177	228	16	3000	3000	0.03	0.932	0.906571	10
base	6	130	147	7	3000	3000	0.03	0.9509	0.9459456	7

1.2 4gt12-v1$_{89}$

Table 3: Results after 1000 iterations

Mapper	# qubits	depth	# gates	# SWAPS	t_1	t_2	meas. err.	p. success	f	
no	6	416	658	0	3000	3000	0.005	0.768	0.66623522	
minextendrc	9	1172	**1360**	**78**	3000	3000	0.005	0.562	**0.44841106**	1
minextend	9	**1008**	1549	99	3000	3000	0.005	**0.601**	0.40972458	
base	6	1069	1423	85	3000	3000	0.005	0.517	0.3581228	

1.3 4gt4-v0$_{72}$

Table 4: Results after 1000 iterations

Mapper	# qubits	depth	# gates	# SWAPS	t_1	t_2	meas. err.	p. success	f	
no	6	442	746	0	3000	3000	0.005	0.786	0.68007548	
minextendrc	9	1352	1592	94	3000	3000	0.005	0.452	**0.37749204**	1
minextend	8	**963**	1736	110	3000	3000	0.005	0.498	0.34067243	
base	6	1056	**1547**	**89**	3000	3000	0.005	**0.532**	0.35703954	

1.4 4mod5-bdd$_{287}$

Table 5: Results after 1000 iterations

Mapper	# qubits	depth	# gates	# SWAPS	t_1	t_2	meas. err.	p. success	f	
no	7	147	203	0	3000	3000	0.005	0.916	0.87474237	1
minextendrc	9	436	500	33	3000	3000	0.005	0.753	0.65935538	3
minextend	9	**332**	500	33	3000	3000	0.005	**0.798**	**0.69281491**	2
base	7	334	**419**	**24**	3000	3000	0.005	0.776	0.67942877	2

1.5 4mod5-v0$_{20}$

Table 6: Results after 1000 iterations

Mapper	# qubits	depth	# gates	# SWAPS	t_1	t_2	meas. err.	p. success	f	
no	5	53	61	0	3000	3000	0.005	0.985	0.97145968	2
minextendrc	9	139	142	9	3000	3000	0.005	0.944	**0.9092329**	12
minextend	8	**128**	160	11	3000	3000	0.005	0.938	0.88981602	10
base	6	133	**119**	**8**	3000	3000	0.005	**0.947**	0.89871898	7

Table 7: Results after 1000 iterations

Mapper	# qubits	# gates	# SWAPS	depth	t_1	t_2	meas. err.	p. success	f	
no	7	247	0	165	3000	3000	0.005	0.94	0.89851036	11
minextendrc	8	571	36	495	3000	3000	0.005	0.847	0.78096707	39
minextend	8	616	41	383	3000	3000	0.005	0.846	0.73109047	30
base	7	472	25	360	3000	3000	0.005	0.841	0.71637503	25

Table 8: Results after 1000 iterations

Mapper	# qubits	# gates	# SWAPS	depth	t_1	t_2	meas. err.	p. success	f	
no	5	107	0	80	3000	3000	0.005	0.98	0.96369032	4
minextendrc	9	278	19	248	3000	3000	0.005	0.959	0.92602273	22
minextend	10	296	21	156	3000	3000	0.005	0.944	0.89032214	15
base	6	278	19	214	3000	3000	0.005	0.915	0.84492332	12

Table 9: Results after 1000 iterations

Mapper	# qubits	# gates	# SWAPS	depth	t_1	t_2	meas. err.	p. success	f	
no	6	207	0	144	3000	3000	0.005	0.938	0.91098461	8
minextendrc	9	441	26	407	3000	3000	0.005	0.888	0.7749599	36
minextend	7	468	29	328	3000	3000	0.005	0.816	0.73708015	22
base	6	405	22	300	3000	3000	0.005	0.781	0.71803687	18

1.6 $\mathbf{alu_{bdd288}}$

1.7 $\mathbf{alu_{v027}}$

1.8 $\mathbf{decod24_{bdd294}}$

1.9 $\mathbf{mod10_{176}}$

Table 10: Results after 1000 iterations

Mapper	# qubits	# gates	# SWAPS	depth	t_1	t_2	meas. err.	p. success	f	
no	5	515	0	327	3000	3000	0.005	0.9	0.82976826	16
minextendrc	7	1199	76	1090	3000	3000	0.005	0.758	0.62105388	76
minextend	10	1127	68	687	3000	3000	0.005	0.733	0.60641905	68
base	6	983	52	734	3000	3000	0.005	0.697	0.56115058	44

Table 11: Results after 1000 iterations

Mapper	# qubits	# gates	# SWAPS	depth	t_1	t_2	meas. err.	p. success	f	
no	6	1583	0	944	3000	3000	0.005	0.71	0.45135226	5
minextendrc	9	3320	193	2878	3000	3000	0.005	0.491	0.1922222	25
minextend	10	3779	244	2667	3000	3000	0.005	0.548	0.18165444	26
base	6	3248	185	2378	3000	3000	0.005	0.591	0.18911191	14

Table 12: Results after 1000 iterations

Mapper	# qubits	# gates	# SWAPS	depth	t_1	t_2	meas. err.	p. success	f	
no	5	69	0	59	3000	3000	0.005	0.989	0.98368741	2
minextendrc	8	195	14	209	3000	3000	0.005	0.958	0.93474128	16
minextend	8	195	14	136	3000	3000	0.005	0.969	0.93997349	10
base	6	195	14	146	3000	3000	0.005	0.95	0.91002595	8

Table 13: Results after 1000 iterations

Mapper	# qubits	# gates	# SWAPS	depth	t_1	t_2	meas. err.	p. success	f	
no	6	1270	0	794	3000	3000	0.005	0.858	0.70131629	4
minextendrc	10	2674	156	2275	3000	3000	0.005	0.52	0.39211003	22
minextend	10	2827	173	1761	3000	3000	0.005	0.411	0.29686116	17
base	6	2773	167	2006	3000	3000	0.005	0.335	0.26106507	12

Table 14: Results after 1000 iterations

Mapper	# qubits	# gates	# SWAPS	depth	t_1	t_2	meas. err.	p. success	f	
no	5	383	0	256	3000	3000	0.005	0.832	0.78653106	12
minextendrc	7	887	56	839	3000	3000	0.005	0.633	0.59855522	58
minextend	10	869	54	530	3000	3000	0.005	0.729	0.62135956	53
base	6	833	50	609	3000	3000	0.005	0.662	0.57083541	36

1.10 mod5adder$_{127}$

1.11 mod5d1$_{63}$

1.12 mod8$_{10177}$

1.13 one$_{\text{twothreev199}}$

1.14 one$_{\text{twothreev3101}}$

Table 15: Results after 1000 iterations

Mapper	# qubits	# gates	# SWAPS	depth	t_1	t_2	meas. err.	p. success	f	
no	5	203	0	143	3000	3000	0.005	0.937	0.88807716	7
minextendrc	8	464	29	440	3000	3000	0.005	0.746	0.620299	35
minextend	8	509	34	302	3000	3000	0.005	0.732	0.63161506	24
base	6	428	25	323	3000	3000	0.005	0.742	0.62081173	19

1.15 rd32$_{\text{v066}}$

Table 16: Results after 1000 iterations

Mapper	# qubits	# gates	# SWAPS	depth	t_1	t_2	meas. err.	p. success	f	
no	4	102	0	83	3000	3000	0.005	0.983	0.97241164	3
minextendrc	7	219	13	195	3000	3000	0.005	0.947	0.91458844	13
minextend	7	228	14	142	3000	3000	0.005	0.958	0.91079208	9
base	5	219	13	169	3000	3000	0.005	0.955	0.90759692	8

1.16 sf$_{274}$

Table 17: Results after 1000 iterations

Mapper	# qubits	# gates	# SWAPS	depth	t_1	t_2	meas. err.	p. success	f	
no	6	2227	0	1359	3000	3000	0.005	0.484	0.34974095	8
minextendrc	7	5116	321	4515	3000	3000	0.005	0.0	0.16778098	31
minextend	10	5071	316	3007	3000	3000	0.005	0.097	0.14752778	30
base	6	4450	247	3289	3000	3000	0.005	0.088	0.15461728	19

1.17 sf$_{276}$

1.18 sym6$_{145}$

Table 18: Results after 1000 iterations

Mapper	# qubits	# gates	# SWAPS	depth	t_1	t_2	meas. err.	p. success	f	
no	6	2224	0	1360	3000	3000	0.005	0.472	0.30846996	8
minextendrc	9	4852	292	4103	3000	3000	0.005	0.0	0.16746873	36
minextend	10	4807	287	2747	3000	3000	0.005	0.092	0.14342305	27
base	6	4447	247	3280	3000	3000	0.005	0.089	0.13928494	19

Table 19: Results after 1000 iterations

Mapper	# qubits	# gates	# SWAPS	depth	t_1	t_2	meas. err.	p. success	f	V_Q
no	7	11185	0	6759	3000	3000	0.005	0.506	0.15429107	47313