Benchmarking PEPSTools.jl with LubaschBanuls2014b (PRB 90, 064425 2014)

Table IV Heisenberg model

10×10

D	Reference	Ours (FU)	Ours (BP5*5)
2	-0.61310(2)	-0.6131018	-0.6131018
3	-0.61999(1)	-0.6200255	-0.6199103
4	-0.62637(2)	-0.6262528	
5	-0.62739(1)		
6	-0.62774(1)		

14×14

D	Reference	Ours (FU)	Ours (BP7*7)
2	-0.61631(1)	-0.6263129	-0.6263137
3	-0.63246(1)	-0.6322762	-0.6323117
4	-0.63832(3)	-0.6382429	
5	-0.62739(1)		
6	-0.62774(1)		

Table IV Heisenberg model

Energy as a function of sweeps

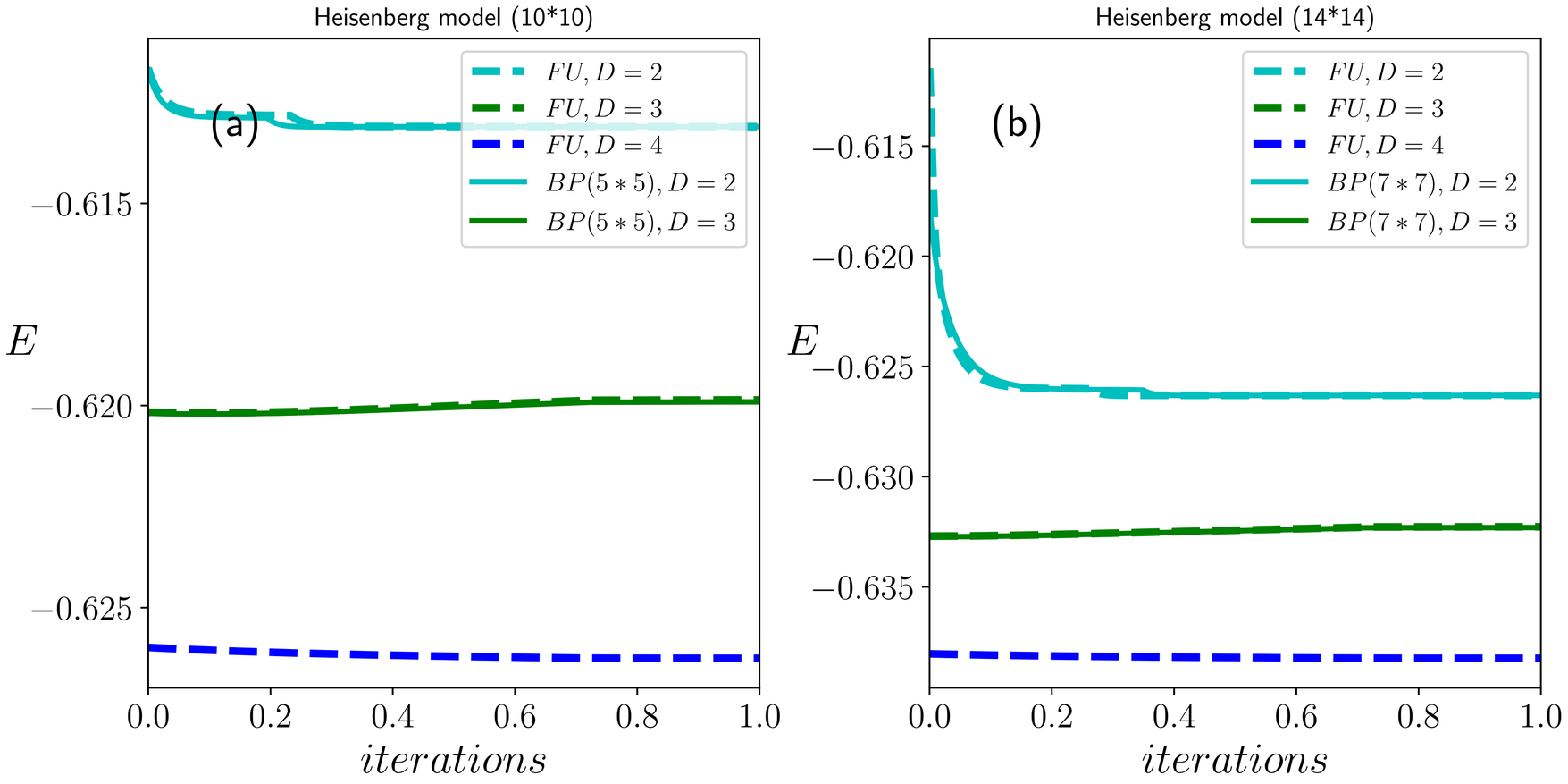

Table VII Ising model

$B = 2$

D	Reference	Ours (FU)	Ours (BP7*7)
2	-2.45291(1)	-2.4521887	-2.4521887
3	-2.45291(1)	-2.4521940	-2.4521940
4	-2.45291(1)	-2.4521942	

$B = 2.5$

D	Reference	Ours (FU)	Ours (BP7*7)
2	-2.77340(2)	-2.7733978	
3	-2.77346(2)	-2.7734635	
4	-2.77346(2)		

Check multi-threading Performance

Time per sweep Full update 10×10 Block BP

nthreads	D=2	D=3	D=4	D=5
1	0.37	2.25	35.32	363.74
2	0.35	2.19	19.01	149.17
4	0.37	1.80	14.40	107.15
8	0.31	1.50	10.22	93.83

nthreads	D=2	D=3	D=4	D=5
1	1.88	7.35	120.13	
2	1.75	5.78	50.45	405.35
4	1.65	5.14	31.41	272.33
8	1.55	6.09	28.95	246.21

Check multi-processing performance

21×21

Full update

Nprocess	D=2	D=3	D=4
1	1.94	16.75	269.08

Block BP

Nprocess	D=2	D=3	D=4
1	12.10	62.66	
3	4.42	20.81	250.29
9	1.86	8.82	121.54