Fermi ($b = 0.05, \epsilon = 10^{-4}$)		**Naïve (V3)**	**QADP ($\delta = 10^{-2}$)**		**QADP ($\delta = 10^{-3}$)**		**QADP ($\delta = 10^{-4}$)**		**QADP ($\delta = 10^{-5}$)**		**QADP ($\delta = 10^{-6}$)**	
Grid size	N ($\lvert\Xi_\omega\rvert$)	CPU$_t$ (s)	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}
50×50	8 (12)	1.12	0.29	5.37e-01	0.26	5.56e-02	0.26	4.37e-03	0.30	5.06e-04	0.38	5.79e-05
	16 (48)	2.37	0.57	1.49e+00	0.52	1.51e-01	0.53	1.45e-02	0.80	1.45e-03	0.79	1.24e-04
	24 (108)	3.27	0.75	2.86e+00	0.71	1.71e-01	0.72	1.25e-02	0.78	1.40e-03	0.99	1.35e-04
	32 (192)	5.10	1.02	2.38e+00	0.99	1.40e-01	0.98	1.34e-02	1.07	1.81e-03	1.41	1.28e-04
$m = 1\,725$	40 (300)	5.90	1.28	1.80e+00	1.22	1.76e-01	1.21	1.30e-02	1.36	1.06e-03	1.79	1.14e-04
75×75	16 (48)	7.28	1.64	1.43e+00	1.25	7.74e-02	1.24	7.84e-03	1.36	9.60e-04	1.79	7.92e-05
	24 (108)	10.47	2.27	2.09e+00	1.76	1.30e-01	1.77	1.03e-02	1.96	1.34e-03	2.44	1.29e-04
	32 (192)	13.86	2.78	3.63e+00	2.28	1.60e-01	2.24	1.49e-02	2.49	1.61e-03	3.10	1.99e-04
	40 (300)	16.13	3.91	3.53e+00	2.75	1.74e-01	2.63	1.62e-02	2.95	1.57e-03	3.66	1.66e-04
$m = 4\,396$	48 (432)	22.82	4.77	5.75e+00	4.07	1.86e-01	7.54	1.49e-02	4.23	1.95e-03	5.02	1.90e-04
100×100	48 (432)	13.13	5.11	2.14e+00	4.52	1.23e-01	3.37	1.27e-02	3.43	1.13e-03	3.55	1.49e-04
	56 (588)	17.57	6.91	1.12e+01	5.91	1.96e-01	5.15	1.98e-02	5.09	1.87e-03	5.14	1.94e-04
	64 (768)	18.97	7.66	5.11e+00	6.62	2.40e-01	5.75	1.98e-02	5.69	1.62e-03	5.72	1.74e-04
	72 (972)	19.30	7.79	3.65e+00	6.57	1.95e-01	5.81	1.46e-02	5.91	1.61e-03	6.13	1.97e-04
$m = 6\,630$	80 (1200)	30.55	11.02	2.41e+00	10.08	1.41e-01	9.50	1.70e-02	9.73	2.10e-03	9.86	1.69e-04
125×125	64 (768)	92.14	25.86	4.12e+00	25.25	2.12e-01	24.63	1.90e-02	24.40	1.46e-03	24.48	1.72e-04
	72 (972)	112.13	31.40	3.67e+00	30.87	1.72e-01	30.36	2.14e-02	30.14	2.20e-03	30.30	1.83e-04
	80 (1200)	117.66	32.86	5.92e+00	32.51	2.13e-01	32.38	2.18e-02	32.28	2.32e-03	32.44	2.29e-04
	88 (1452)	134.72	37.87	4.42e+00	37.70	1.96e-01	42.44	6.40e-02	38.00	2.17e-03	38.35	2.50e-04
$m = 10\,293$	96 (1728)	164.75	44.50	6.71e+00	44.37	2.61e-01	44.73	1.82e-02	44.86	1.89e-03	45.32	2.90e-04
150×150	80 (1200)	115.21	35.47	4.12e+00	38.47	1.44e-01	35.46	1.82e-02	36.25	2.03e-03	35.76	1.81e-04
	88 (1452)	111.24	34.94	5.35e+00	34.67	1.82e-01	34.82	1.72e-02	35.11	2.03e-03	35.03	1.94e-04
	96 (1728)	150.17	43.92	3.86e+00	43.81	2.10e-01	44.03	1.90e-02	44.43	2.55e-03	44.35	1.86e-04
	104 (2028)	156.34	45.93	4.54e+00	45.94	1.66e-01	46.08	1.77e-02	46.63	1.55e-03	46.52	1.85e-04
$m = 19\,244$	112 (2352)	159.38	46.65	6.08e+00	46.55	2.13e-01	46.79	1.49e-02	47.33	2.13e-03	47.23	2.21e-04
175×175	120 (2700)	393.86	88.13	6.43e+00	91.79	2.35e-01	88.68	1.83e-02	88.54	1.88e-03	88.62	1.81e-04
	128 (3072)	413.73	92.08	6.67e+00	92.18	1.96e-01	92.68	1.98e-02	93.32	1.80e-03	92.63	2.54e-04
	136 (3468)	476.29	106.12	3.98e+00	106.79	1.77e-01	106.63	1.51e-02	106.88	3.18e-03	106.53	1.94e-04
	144 (3888)	510.90	113.58	7.23e+00	113.77	2.35e-01	113.95	2.73e-02	113.90	1.85e-03	113.09	2.50e-04
$m = 23\,954$	152 (4332)	540.82	119.60	9.51e+00	119.78	2.45e-01	120.10	2.65e-02	120.52	2.11e-03	119.70	2.26e-04
200×200	208 (8112)	370.75	153.59	2.31e+00	153.68	1.94e-01	153.98	1.99e-02	163.25	1.64e-03	153.71	1.34e-04
	216 (8748)	386.72	156.40	6.79e+00	156.25	2.13e-01	156.31	1.92e-02	156.48	2.96e-03	155.92	2.47e-04
	224 (9408)	416.56	171.14	4.18e+00	171.07	1.80e-01	170.98	1.68e-02	170.31	1.65e-03	170.78	1.53e-04
	232 (10092)	404.49	163.44	3.23e+00	163.49	2.03e-01	163.50	1.83e-02	163.70	2.00e-03	163.49	2.23e-04
$m = 32\,612$	240 (10800)	384.02	157.48	5.48e+00	157.47	1.54e-01	157.63	1.85e-02	157.92	1.70e-03	157.59	1.72e-04

Table 1: Comparisons between naïve (without QADP) and enhanced (with QADP) update procedure version no. 3 (V3) to perform 1 000 iterations, where an iteration corresponds to a local change in the network, i.e. moving randomly a restricted set of buoys (1, 2 or 3 at random). At each iteration, the different updates are carried out on the same network to ensure a fair comparison. Here using **Fermi** function (transition curve) with $\mathbf{b = 0.05}$, $\epsilon = \mathbf{10^{-4}}$ and for different sampling levels (δ). For QADP methods, CPU times include the pre-processing procedure used to construct the look-up table. err_{max} corresponds to the maximum error encountered in terms of probability points on all the CPDs of a network and over all iterations (worst-case scenario approach).

Fermi ($b = 0.1, \epsilon = 10^{-4}$)		**Naïve (V3)**	**QADP ($\delta = 10^{-2}$)**		**QADP ($\delta = 10^{-3}$)**		**QADP ($\delta = 10^{-4}$)**		**QADP ($\delta = 10^{-5}$)**		**QADP ($\delta = 10^{-6}$)**	
Grid size	N ($\lvert\Xi_\omega\rvert$)	CPU$_t$ (s)	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}
50×50	8 (12)	1.17	0.31	4.43e-01	0.28	4.14e-02	0.29	3.25e-03	0.33	3.93e-04	0.45	3.43e-05
	16 (48)	2.21	0.55	7.48e-01	0.50	6.50e-02	0.51	5.95e-03	0.57	6.32e-04	0.79	6.54e-05
	24 (108)	3.39	0.79	9.81e-01	0.74	6.66e-02	0.75	7.57e-03	0.83	7.39e-04	1.17	7.88e-05
	32 (192)	4.69	1.05	1.01e+00	1.00	8.44e-02	1.02	8.05e-03	1.13	1.06e-03	1.54	8.91e-05
$m = 1\,725$	40 (300)	5.65	1.33	1.46e+00	1.21	7.27e-02	1.24	7.51e-03	1.41	8.73e-04	1.99	9.92e-05
75×75	16 (48)	7.43	1.68	6.32e-01	1.30	5.02e-02	1.29	6.22e-03	1.44	6.93e-04	1.93	6.25e-05
	24 (108)	10.26	2.13	1.07e+00	1.73	6.84e-02	1.73	8.32e-03	1.92	6.58e-04	2.56	6.80e-05
	32 (192)	13.62	2.83	8.92e-01	5.62	7.00e-02	2.26	7.14e-03	2.55	8.90e-04	3.26	7.27e-05
	40 (300)	18.50	3.65	1.72e+00	3.10	1.06e-01	3.00	1.16e-02	3.37	1.17e-03	4.40	9.70e-05
$m = 4\,396$	48 (432)	21.66	4.46	1.37e+00	3.78	9.00e-02	3.57	8.61e-03	4.01	8.74e-04	5.23	1.05e-04
100×100	48 (432)	13.49	5.35	1.08e+00	4.13	8.12e-02	3.60	8.17e-03	3.83	9.85e-04	4.03	8.04e-05
	56 (588)	14.99	6.04	1.22e+00	4.71	9.31e-02	4.06	7.71e-03	4.14	8.16e-04	4.30	7.76e-05
	64 (768)	17.62	7.54	3.07e+00	6.97	8.45e-02	5.71	9.37e-03	5.81	7.24e-04	5.98	1.22e-04
	72 (972)	21.06	8.47	2.91e+00	7.43	1.36e-01	6.88	1.44e-02	7.05	1.18e-03	7.25	1.49e-04
$m = 6\,630$	80 (1200)	22.41	9.28	1.45e+00	8.17	9.52e-02	7.63	1.02e-02	7.85	1.14e-03	8.01	8.93e-05
125×125	64 (768)	96.04	27.47	1.19e+00	27.17	7.83e-02	27.05	8.66e-03	31.26	9.48e-04	27.17	8.90e-05
	72 (972)	118.32	33.11	1.91e+00	32.86	1.18e-01	33.00	1.42e-02	33.01	1.07e-03	33.21	1.13e-04
	80 (1200)	116.37	32.52	1.91e+00	32.28	1.99e-01	32.23	1.20e-02	32.31	1.20e-03	32.62	1.26e-04
	88 (1452)	138.07	38.17	2.34e+00	37.97	1.20e-01	38.42	1.27e-02	38.79	1.17e-03	39.16	1.71e-04
$m = 10\,293$	96 (1728)	147.38	39.66	1.99e+00	39.42	1.37e-01	39.76	1.21e-02	40.28	1.20e-03	40.59	1.31e-04
150×150	80 (1200)	122.03	36.39	2.25e+00	36.44	1.07e-01	36.61	1.21e-02	37.01	1.13e-03	36.88	1.13e-04
	88 (1452)	132.05	39.76	5.53e+00	39.69	1.39e-01	40.01	1.76e-02	40.39	1.40e-03	40.24	1.42e-04
	96 (1728)	132.69	40.61	1.39e+00	40.50	1.16e-01	40.93	9.45e-03	41.33	1.00e-03	41.21	8.54e-05
	104 (2028)	158.78	46.02	2.04e+00	46.01	1.08e-01	46.51	1.22e-02	46.97	1.32e-03	46.77	1.25e-04
$m = 19\,244$	112 (2352)	171.28	50.64	2.28e+00	50.55	1.38e-01	51.14	1.14e-02	51.61	1.33e-03	51.50	1.58e-04
175×175	120 (2700)	450.71	100.98	1.70e+00	100.36	1.14e-01	101.17	1.04e-02	101.21	1.09e-03	100.80	1.21e-04
	128 (3072)	481.56	107.81	1.91e+00	107.05	1.11e-01	107.59	9.80e-03	107.82	9.88e-04	107.47	1.20e-04
	136 (3468)	474.73	106.87	1.83e+00	106.72	1.33e-01	107.45	1.14e-02	107.64	1.29e-03	107.16	1.38e-04
	144 (3888)	541.72	120.55	2.80e+00	120.20	1.09e-01	120.87	1.37e-02	121.28	1.37e-03	121.29	1.45e-04
$m = 23\,954$	152 (4332)	523.48	117.15	3.50e+00	117.06	1.24e-01	117.77	1.12e-02	117.99	1.17e-03	117.51	1.36e-04
200×200	208 (8112)	340.34	138.88	1.82e+00	138.86	1.19e-01	139.08	1.44e-02	139.64	1.67e-03	139.13	1.42e-04
	216 (8748)	329.28	137.86	1.65e+00	137.76	1.30e-01	138.04	1.38e-02	138.16	1.43e-03	137.83	1.77e-04
	224 (9408)	370.15	152.42	1.72e+00	152.27	1.04e-01	152.40	1.68e-02	153.16	1.28e-03	152.48	1.60e-04
	232 (10092)	381.42	155.07	1.81e+00	154.70	1.20e-01	155.13	1.06e-02	155.17	1.08e-03	154.60	1.30e-04
$m = 32\,612$	240 (10800)	393.91	162.24	9.12e-01	162.49	8.55e-02	162.90	9.75e-03	163.25	8.31e-04	162.59	1.12e-04

Table 2: Comparisons between naïve (without QADP) and enhanced (with QADP) update procedure version no. 3 (V3) to perform 1 000 iterations, where an iteration corresponds to a local change in the network, i.e. moving randomly a restricted set of buoys (1, 2 or 3 at random). At each iteration, the different updates are carried out on the same network to ensure a fair comparison. Here using **Fermi** function (transition curve) with $\mathbf{b = 0.1}$, $\epsilon = \mathbf{10^{-4}}$ and for different sampling levels (δ). For QADP methods, CPU times include the pre-processing procedure used to construct the look-up table. err_{max} corresponds to the maximum error encountered in terms of probability points on all the CPDs of a network and over all iterations (worst-case scenario approach).

Fermi ($b = 0.2, \epsilon = 10^{-4}$)		**Naïve (V3)**	**QADP ($\delta = 10^{-2}$)**		**QADP ($\delta = 10^{-3}$)**		**QADP ($\delta = 10^{-4}$)**		**QADP ($\delta = 10^{-5}$)**		**QADP ($\delta = 10^{-6}$)**	
Grid size	N ($\lvert\Xi_\omega\rvert$)	CPU$_t$ (s)	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}
50×50	8 (12)	1.05	0.29	1.99e-01	0.26	2.42e-02	0.27	2.14e-03	0.30	2.22e-04	0.47	2.38e-05
	16 (48)	2.27	0.58	4.03e-01	0.53	3.01e-02	0.56	3.64e-03	0.66	3.86e-04	0.93	3.00e-05
	24 (108)	3.54	0.85	5.00e-01	0.80	4.19e-02	0.84	4.33e-03	0.94	4.35e-04	1.42	3.48e-05
	32 (192)	4.53	1.07	5.94e-01	1.01	3.87e-02	1.06	5.04e-03	1.19	4.52e-04	1.74	3.64e-05
$m = 1\,725$	40 (300)	6.84	1.49	4.45e-01	1.43	3.66e-02	1.49	3.38e-03	1.69	4.10e-04	2.55	4.79e-05
75×75	16 (48)	6.68	1.57	2.66e-01	1.20	2.41e-02	1.21	2.50e-03	1.43	2.61e-04	1.82	3.40e-05
	24 (108)	10.85	2.31	3.33e-01	1.91	3.52e-02	1.90	2.87e-03	2.20	3.57e-04	2.88	3.50e-05
	32 (192)	15.09	3.09	6.38e-01	2.62	3.82e-02	2.69	3.86e-03	3.02	4.13e-04	3.88	3.99e-05
	40 (300)	18.21	3.89	5.41e-01	3.18	5.54e-02	3.04	6.17e-03	3.60	6.20e-04	4.53	4.90e-05
$m = 4\,396$	48 (432)	22.91	4.84	8.45e-01	4.17	4.70e-02	4.01	5.77e-03	4.75	5.28e-04	5.84	5.07e-05
100×100	48 (432)	13.10	4.90	5.48e-01	3.93	5.11e-02	3.62	5.37e-03	3.99	4.76e-04	4.38	4.79e-05
	56 (588)	16.31	6.70	7.42e-01	5.48	5.00e-02	4.83	5.68e-03	5.15	5.76e-04	5.48	4.90e-05
	64 (768)	18.13	7.52	6.93e-01	6.39	5.74e-02	5.75	4.88e-03	6.10	5.81e-04	6.44	6.27e-05
	72 (972)	20.40	8.42	4.65e-01	7.32	3.63e-02	7.36	3.66e-03	7.23	3.30e-04	7.51	4.41e-05
$m = 6\,630$	80 (1200)	25.05	10.68	5.60e-01	9.70	4.23e-02	9.17	4.36e-03	9.65	4.24e-04	10.09	5.27e-05
125×125	64 (768)	95.77	27.22	5.70e-01	27.03	5.01e-02	27.04	4.68e-03	27.43	4.47e-04	27.79	4.94e-05
	72 (972)	113.60	32.23	7.16e-01	32.02	6.87e-02	32.09	7.03e-03	32.65	7.38e-04	33.11	6.40e-05
	80 (1200)	123.13	34.75	8.59e-01	34.70	5.26e-02	34.96	7.60e-03	35.58	5.75e-04	36.25	6.10e-05
	88 (1452)	138.11	39.12	4.66e-01	40.64	4.33e-02	39.52	4.27e-03	40.33	4.72e-04	41.12	5.26e-05
$m = 10\,293$	96 (1728)	149.50	41.92	1.25e+00	41.75	5.04e-02	42.34	5.88e-03	43.39	7.72e-04	44.35	9.87e-05
150×150	80 (1200)	134.66	44.38	7.48e-01	44.60	7.53e-02	45.11	6.47e-03	45.81	7.44e-04	46.33	6.17e-05
	88 (1452)	158.93	52.90	6.82e-01	52.87	5.86e-02	53.62	5.51e-03	54.41	5.96e-04	55.19	6.11e-05
	96 (1728)	147.13	44.45	6.68e-01	43.72	5.60e-02	44.08	4.13e-03	44.89	5.86e-04	45.14	4.59e-05
	104 (2028)	160.37	48.41	6.02e-01	48.30	5.18e-02	49.09	5.31e-03	50.24	5.71e-04	50.69	4.69e-05
$m = 19\,244$	112 (2352)	167.02	51.08	9.08e-01	50.93	4.30e-02	51.57	4.56e-03	52.43	4.86e-04	53.07	5.06e-05
175×175	120 (2700)	505.52	128.12	6.79e-01	127.88	6.82e-02	128.94	5.50e-03	128.96	4.90e-04	129.15	5.84e-05
	128 (3072)	567.80	146.86	6.73e-01	146.69	6.57e-02	147.10	5.66e-03	147.57	6.75e-04	147.56	6.73e-05
	136 (3468)	587.92	150.93	7.43e-01	150.94	5.69e-02	151.46	5.62e-03	152.19	5.96e-04	152.24	5.44e-05
	144 (3888)	676.87	172.72	6.43e-01	172.78	5.47e-02	173.01	6.82e-03	173.61	6.01e-04	173.80	7.01e-05
$m = 23\,954$	152 (4332)	623.85	160.98	8.19e-01	161.53	4.60e-02	161.04	6.57e-03	161.76	6.59e-04	162.49	9.44e-05
200×200	208 (8112)	347.54	139.18	4.74e-01	139.45	4.77e-02	139.67	4.42e-03	140.16	4.59e-04	143.63	5.11e-05
	216 (8748)	367.19	148.55	9.81e-01	148.61	7.58e-02	148.97	5.51e-03	149.84	5.13e-04	149.54	5.36e-05
	224 (9408)	415.82	160.97	8.78e-01	161.42	5.52e-02	161.87	5.15e-03	162.46	5.23e-04	161.92	6.60e-05
	232 (10092)	384.28	162.42	6.79e-01	162.87	5.74e-02	163.45	5.70e-03	163.74	5.49e-04	163.25	5.97e-05
$m = 32\,612$	240 (10800)	422.09	175.12	8.71e-01	175.46	5.78e-02	175.82	7.81e-03	176.33	5.81e-04	176.08	7.28e-05

Table 3: Comparisons between naïve (without QADP) and enhanced (with QADP) update procedure version no. 3 (V3) to perform 1 000 iterations, where an iteration corresponds to a local change in the network, i.e. moving randomly a restricted set of buoys (1, 2 or 3 at random). At each iteration, the different updates are carried out on the same network to ensure a fair comparison. Here using **Fermi** function (transition curve) with $\mathbf{b = 0.2}$, $\epsilon = \mathbf{10^{-4}}$ and for different sampling levels (δ). For QADP methods, CPU times include the pre-processing procedure used to construct the look-up table. err_{max} corresponds to the maximum error encountered in terms of probability points on all the CPDs of a network and over all iterations (worst-case scenario approach).

Fermi ($b = 0.4, \epsilon = 10^{-4}$)		**Naïve (V3)**	**QADP ($\delta = 10^{-2}$)**		**QADP ($\delta = 10^{-3}$)**		**QADP ($\delta = 10^{-4}$)**		**QADP ($\delta = 10^{-5}$)**		**QADP ($\delta = 10^{-6}$)**	
Grid size	N ($\lvert\Xi_\omega\rvert$)	CPU$_t$ (s)	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}
50×50	8 (12)	1.11	0.32	9.58e-02	0.28	9.66e-03	0.30	7.94e-04	0.36	8.06e-05	0.61	9.03e-06
	16 (48)	2.24	0.60	1.81e-01	0.55	1.43e-02	0.58	1.46e-03	0.68	1.46e-04	1.13	1.29e-05
	24 (108)	3.47	0.90	1.51e-01	0.83	1.19e-02	0.87	1.53e-03	1.04	1.11e-04	1.67	1.07e-05
	32 (192)	4.48	1.11	1.60e-01	1.05	1.86e-02	1.09	1.58e-03	1.30	1.89e-04	2.12	2.10e-05
$m = 1\,725$	40 (300)	6.07	1.46	9.32e-02	1.39	1.19e-02	1.45	1.25e-03	1.74	1.03e-04	2.79	1.20e-05
75×75	16 (48)	7.28	1.77	1.04e-01	1.39	1.10e-02	1.43	1.38e-03	1.73	1.46e-04	2.33	9.74e-06
	24 (108)	11.12	2.54	1.67e-01	2.03	1.66e-02	2.07	2.05e-03	2.59	1.82e-04	3.47	1.79e-05
	32 (192)	15.13	3.24	1.90e-01	2.76	1.39e-02	2.77	1.44e-03	3.41	1.53e-04	4.43	2.38e-05
	40 (300)	19.14	4.50	1.89e-01	3.67	2.00e-02	3.58	2.17e-03	4.55	1.59e-04	6.53	2.55e-05
$m = 4\,396$	48 (432)	26.68	6.97	1.36e-01	5.65	1.35e-02	5.39	1.54e-03	6.79	2.34e-04	10.23	2.08e-05
100×100	48 (432)	15.36	6.53	2.67e-01	5.28	1.83e-02	5.37	1.72e-03	5.19	1.93e-04	5.86	1.94e-05
	56 (588)	17.87	8.16	1.69e-01	7.35	1.72e-02	7.09	1.90e-03	7.51	2.04e-04	8.08	1.63e-05
	64 (768)	18.79	7.76	2.52e-01	6.53	2.18e-02	6.00	2.03e-03	6.63	2.53e-04	7.38	2.94e-05
	72 (972)	22.02	9.56	2.38e-01	8.52	1.83e-02	8.11	3.78e-03	9.58	2.32e-04	9.73	2.00e-05
$m = 6\,630$	80 (1200)	23.95	10.12	1.36e-01	8.93	1.78e-02	8.51	1.26e-03	9.36	1.40e-04	10.32	1.19e-05
125×125	64 (768)	95.91	27.95	2.16e-01	27.23	2.31e-02	26.81	2.24e-03	27.48	1.88e-04	28.22	2.36e-05
	72 (972)	109.91	31.77	1.88e-01	31.26	2.06e-02	31.31	2.01e-03	32.01	1.69e-04	32.94	2.33e-05
	80 (1200)	143.71	40.66	2.72e-01	40.51	3.20e-02	41.53	2.99e-03	42.82	3.30e-04	44.72	3.04e-05
	88 (1452)	141.29	40.56	2.25e-01	40.46	1.85e-02	41.61	2.28e-03	44.71	2.30e-04	47.02	1.71e-05
$m = 10\,293$	96 (1728)	143.56	40.61	2.56e-01	40.51	2.30e-02	41.54	2.85e-03	43.10	1.97e-04	44.47	2.94e-05
150×150	80 (1200)	123.53	37.00	2.72e-01	37.02	2.62e-02	37.87	2.27e-03	39.62	2.99e-04	38.77	2.56e-05
	88 (1452)	138.60	41.35	3.59e-01	41.26	3.99e-02	42.52	3.30e-03	44.76	2.74e-04	43.74	3.00e-05
	96 (1728)	145.55	44.62	3.87e-01	44.58	2.90e-02	45.78	2.94e-03	48.20	3.20e-04	47.24	2.77e-05
	104 (2028)	142.68	43.54	2.48e-01	43.44	1.92e-02	45.17	1.96e-03	47.09	2.24e-04	45.91	1.75e-05
$m = 19\,244$	112 (2352)	175.82	52.78	3.18e-01	52.78	2.31e-02	53.56	2.62e-03	56.32	2.21e-04	55.01	1.74e-05
175×175	120 (2700)	555.39	147.57	3.52e-01	147.48	2.66e-02	148.21	2.32e-03	149.39	3.23e-04	148.07	3.14e-05
	128 (3072)	515.22	134.68	3.16e-01	134.31	2.78e-02	134.86	2.68e-03	136.42	2.24e-04	135.43	2.59e-05
	136 (3468)	534.59	141.61	3.45e-01	140.95	2.43e-02	141.47	3.10e-03	143.09	2.65e-04	141.88	2.96e-05
	144 (3888)	581.14	150.68	2.66e-01	150.61	3.11e-02	151.41	2.51e-03	153.31	2.94e-04	152.10	2.63e-05
$m = 23\,954$	152 (4332)	651.32	168.78	3.70e-01	168.61	2.91e-02	168.75	2.89e-03	170.94	2.49e-04	169.61	2.45e-05
200×200	208 (8112)	344.20	141.65	2.26e-01	141.66	2.26e-02	143.19	2.21e-03	144.23	2.79e-04	142.62	2.49e-05
	216 (8748)	345.86	143.30	2.14e-01	143.62	1.87e-02	145.16	1.90e-03	146.09	1.96e-04	144.47	1.92e-05
	224 (9408)	366.61	151.94	2.09e-01	151.82	2.10e-02	153.46	2.32e-03	154.58	3.00e-04	156.46	3.00e-05
	232 (10092)	381.17	157.66	2.73e-01	158.03	3.64e-02	159.71	2.71e-03	160.61	3.67e-04	159.10	2.45e-05
$m = 32\,612$	240 (10800)	393.25	160.55	2.99e-01	160.74	2.41e-02	162.41	2.31e-03	163.62	2.69e-04	161.87	3.69e-05

Table 4: Comparisons between naïve (without QADP) and enhanced (with QADP) update procedure version no. 3 (V3) to perform 1 000 iterations, where an iteration corresponds to a local change in the network, i.e. moving randomly a restricted set of buoys (1, 2 or 3 at random). At each iteration, the different updates are carried out on the same network to ensure a fair comparison. Here using **Fermi** function (transition curve) with $\mathbf{b = 0.4}$, $\epsilon = \mathbf{10^{-4}}$ and for different sampling levels (δ). For QADP methods, CPU times include the pre-processing procedure used to construct the look-up table. err_{max} corresponds to the maximum error encountered in terms of probability points on all the CPDs of a network and over all iterations (worst-case scenario approach).

Fermi ($b = 0.8, \epsilon = 10^{-4}$)		**Naïve (V3)**	**QADP ($\delta = 10^{-2}$)**		**QADP ($\delta = 10^{-3}$)**		**QADP ($\delta = 10^{-4}$)**		**QADP ($\delta = 10^{-5}$)**		**QADP ($\delta = 10^{-6}$)**	
Grid size	N ($\lvert\Xi_\omega\rvert$)	CPU$_t$ (s)	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}
50×50	8 (12)	1.05	0.32	3.90e-02	0.29	2.89e-03	0.33	3.42e-04	0.43	3.40e-05	0.77	2.77e-06
	16 (48)	2.33	1.17	4.40e-02	0.61	4.58e-03	0.68	4.19e-04	0.82	5.64e-05	1.43	4.59e-06
	24 (108)	3.52	0.95	4.68e-02	0.89	4.57e-03	0.98	4.67e-04	1.23	5.11e-05	2.12	4.33e-06
	32 (192)	4.34	1.22	5.77e-02	1.11	4.48e-03	1.21	7.49e-04	1.50	6.72e-05	2.73	8.05e-06
$m = 1\,725$	40 (300)	5.97	1.56	1.07e-01	1.49	4.75e-03	1.62	4.43e-04	1.95	5.36e-05	4.31	6.60e-06
75×75	16 (48)	7.69	2.12	7.49e-02	1.55	6.66e-03	1.64	7.85e-04	2.21	6.80e-05	3.07	6.67e-06
	24 (108)	10.57	2.79	7.85e-02	2.08	7.25e-03	2.19	9.25e-04	2.96	7.90e-05	4.07	7.44e-06
	32 (192)	16.00	4.38	7.52e-02	3.39	8.78e-03	3.46	8.25e-04	5.00	8.73e-05	6.14	8.09e-06
	40 (300)	19.09	4.84	6.19e-02	3.98	5.86e-03	4.04	6.02e-04	5.63	6.66e-05	8.40	5.43e-06
$m = 4\,396$	48 (432)	24.26	5.75	4.50e-02	5.14	5.87e-03	5.39	4.92e-04	7.30	5.93e-05	12.62	4.68e-06
100×100	48 (432)	15.12	6.37	1.26e-01	5.17	1.06e-02	4.90	1.14e-03	6.10	1.15e-04	5.91	1.00e-05
	56 (588)	17.05	7.39	6.16e-02	6.18	6.78e-03	5.82	6.46e-04	6.92	9.14e-05	7.36	8.37e-06
	64 (768)	21.21	9.04	7.23e-02	7.90	7.90e-03	7.63	5.95e-04	9.14	7.58e-05	8.81	6.44e-06
	72 (972)	21.19	9.10	1.18e-01	7.92	9.80e-03	7.73	1.02e-03	9.06	1.02e-04	8.77	1.02e-05
$m = 6\,630$	80 (1200)	25.04	11.08	6.13e-02	9.96	5.68e-03	10.02	6.68e-04	12.48	7.11e-05	11.22	8.13e-06
125×125	64 (768)	95.07	28.75	1.10e-01	28.38	1.02e-02	29.83	1.19e-03	31.86	1.22e-04	30.99	1.26e-05
	72 (972)	117.29	34.53	1.22e-01	34.44	9.17e-03	36.58	1.07e-03	39.31	1.13e-04	38.56	8.74e-06
	80 (1200)	126.92	37.21	1.03e-01	37.11	9.72e-03	39.79	1.12e-03	42.85	1.28e-04	42.16	1.17e-05
	88 (1452)	137.04	40.74	1.09e-01	40.72	8.35e-03	43.65	8.42e-04	46.73	1.23e-04	45.86	9.34e-06
$m = 10\,293$	96 (1728)	158.30	46.57	8.51e-02	46.69	8.65e-03	50.03	8.57e-04	53.70	9.36e-05	52.81	9.63e-06
150×150	80 (1200)	148.41	54.63	9.96e-02	49.86	9.31e-03	51.72	1.16e-03	55.36	1.16e-04	55.98	1.30e-05
	88 (1452)	151.08	54.38	6.22e-02	54.41	5.95e-03	55.80	7.04e-04	59.95	5.22e-05	61.60	5.92e-06
	96 (1728)	191.49	65.63	1.49e-01	65.75	1.32e-02	67.43	1.35e-03	72.11	1.32e-04	74.36	1.05e-05
	104 (2028)	181.06	64.81	1.02e-01	64.85	8.12e-03	66.80	1.19e-03	72.21	1.04e-04	74.42	1.15e-05
$m = 19\,244$	112 (2352)	222.83	75.40	8.24e-02	75.58	7.02e-03	77.89	7.15e-04	83.67	9.56e-05	86.07	1.21e-05
175×175	120 (2700)	529.78	139.68	1.27e-01	140.46	1.10e-02	142.47	1.12e-03	144.03	1.06e-04	143.94	1.14e-05
	128 (3072)	550.64	145.06	1.03e-01	145.43	9.54e-03	147.51	1.20e-03	149.63	8.34e-05	148.91	1.02e-05
	136 (3468)	615.14	162.96	1.02e-01	163.52	1.29e-02	165.91	9.27e-04	167.82	9.25e-05	167.19	9.69e-06
	144 (3888)	654.78	173.53	1.20e-01	170.40	1.26e-02	173.22	1.22e-03	175.63	1.67e-04	174.60	1.32e-05
$m = 23\,954$	152 (4332)	676.20	175.90	1.70e-01	176.49	9.26e-03	179.34	1.23e-03	182.05	1.03e-04	181.76	9.63e-06
200×200	208 (8112)	379.06	146.75	1.21e-01	147.31	7.72e-03	150.34	1.27e-03	151.42	1.27e-04	153.68	8.76e-06
	216 (8748)	371.56	150.19	1.04e-01	150.80	1.27e-02	154.08	1.24e-03	155.08	1.37e-04	157.68	1.29e-05
	224 (9408)	421.83	171.58	6.78e-02	172.38	7.34e-03	175.75	5.88e-04	176.87	6.57e-05	179.28	6.02e-06
	232 (10092)	381.01	154.80	1.61e-01	155.39	9.39e-03	158.16	9.29e-04	159.14	1.01e-04	161.09	1.16e-05
$m = 32\,612$	240 (10800)	446.49	179.59	1.09e-01	180.35	1.08e-02	183.61	9.50e-04	184.60	9.81e-05	186.98	9.60e-06

Table 5: Comparisons between naïve (without QADP) and enhanced (with QADP) update procedure version no. 3 (V3) to perform 1 000 iterations, where an iteration corresponds to a local change in the network, i.e. moving randomly a restricted set of buoys (1, 2 or 3 at random). At each iteration, the different updates are carried out on the same network to ensure a fair comparison. Here using **Fermi** function (transition curve) with $\mathbf{b = 0.8}$, $\epsilon = \mathbf{10^{-4}}$ and for different sampling levels (δ). For QADP methods, CPU times include the pre-processing procedure used to construct the look-up table. err_{max} corresponds to the maximum error encountered in terms of probability points on all the CPDs of a network and over all iterations (worst-case scenario approach).

Exponential ($\epsilon = 10^{-4}$)		**Naïve (V3)**	**QADP ($\delta = 10^{-2}$)**		**QADP ($\delta = 10^{-3}$)**		**QADP ($\delta = 10^{-4}$)**		**QADP ($\delta = 10^{-5}$)**		**QADP ($\delta = 10^{-6}$)**	
Grid size	N ($\lvert\Xi_\omega\rvert$)	CPU$_t$ (s)	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}	CPU$_t$ (s)	err_{max}
50×50	8 (12)	1.21	0.36	3.50e-01	0.32	4.09e-02	0.42	3.58e-03	0.68	2.85e-04	5.82	2.77e-05
	16 (48)	2.46	0.74	2.32e-01	0.65	1.98e-02	0.80	1.84e-03	1.24	1.65e-04	6.94	2.09e-05
	24 (108)	3.45	1.01	7.14e-03	0.93	5.76e-04	1.11	1.01e-04	1.61	4.83e-06	7.95	9.05e-07
	32 (192)	4.74	1.36	3.80e-02	1.28	2.41e-03	1.52	4.50e-04	2.15	3.41e-05	9.13	3.03e-06
$m = 1\,725$	40 (300)	5.98	1.70	1.17e-02	1.61	8.68e-04	1.93	1.63e-05	2.78	6.59e-06	10.48	3.64e-07
75×75	16 (48)	7.01	2.03	3.28e-01	1.76	2.20e-02	2.17	1.74e-03	3.92	1.65e-04	5.43	1.87e-05
	24 (108)	10.58	2.92	2.53e-01	2.58	2.14e-02	3.25	1.20e-03	6.08	1.51e-04	7.81	1.70e-05
	32 (192)	14.38	4.00	2.82e-01	3.51	1.91e-02	4.40	1.81e-03	8.09	1.93e-04	10.35	1.97e-05
	40 (300)	18.45	5.26	1.84e-02	4.64	2.67e-03	5.81	1.99e-04	10.78	3.25e-05	12.63	2.70e-06
$m = 4\,396$	48 (432)	21.17	6.10	1.24e-02	5.40	8.19e-04	6.71	2.08e-04	12.32	1.32e-05	14.30	1.62e-06
100×100	48 (432)	14.30	6.48	1.49e-01	5.25	1.67e-02	5.89	1.08e-03	8.83	1.38e-04	8.40	1.22e-05
	56 (588)	16.91	7.80	2.07e-01	6.52	1.73e-02	7.33	1.29e-03	10.62	1.79e-04	9.90	1.33e-05
	64 (768)	18.60	8.71	1.81e-01	8.19	1.41e-02	8.55	2.33e-03	11.85	2.22e-04	10.98	1.15e-05
	72 (972)	19.85	9.49	2.35e-01	8.46	1.63e-02	9.47	2.13e-03	12.71	1.85e-04	11.80	1.79e-05
$m = 6\,630$	80 (1200)	24.96	12.09	9.92e-02	11.04	1.02e-02	12.39	1.11e-03	16.29	6.87e-05	14.97	1.38e-05
125×125	64 (768)	103.01	36.33	2.72e-01	36.55	3.52e-02	41.05	3.50e-03	50.24	2.76e-04	50.10	3.14e-05
	72 (972)	115.76	41.84	1.52e-01	40.96	1.53e-02	45.31	1.23e-03	54.93	1.35e-04	54.72	9.79e-06
	80 (1200)	113.97	39.23	1.70e-01	38.98	1.77e-02	42.67	1.30e-03	51.27	1.27e-04	52.14	9.24e-06
	88 (1452)	135.32	47.01	1.24e-01	47.14	1.42e-02	52.44	1.33e-03	62.88	9.73e-05	64.58	9.37e-06
$m = 10\,293$	96 (1728)	154.12	53.34	2.42e-02	53.62	2.44e-03	59.14	1.48e-04	70.95	2.68e-05	73.54	2.37e-06
150×150	80 (1200)	153.95	64.46	4.81e-01	61.51	3.36e-02	69.52	2.90e-03	82.07	3.26e-04	75.99	2.27e-05
	88 (1452)	161.34	63.76	1.28e-01	64.93	1.52e-02	73.15	1.16e-03	85.75	1.20e-04	79.85	1.30e-05
	96 (1728)	188.03	73.43	3.31e-01	75.01	1.74e-02	84.19	1.17e-03	98.04	1.63e-04	91.06	1.24e-05
	104 (2028)	181.13	70.17	4.32e-01	71.28	2.46e-02	79.03	2.65e-03	92.83	2.74e-04	89.27	3.48e-05
$m = 19\,244$	112 (2352)	220.59	83.05	1.86e-01	84.43	1.11e-02	94.64	1.24e-03	109.67	1.44e-04	104.63	1.34e-05
175×175	120 (2700)	505.98	146.54	1.43e-01	148.86	1.01e-02	162.59	1.30e-03	173.16	1.35e-04	169.63	8.90e-06
	128 (3072)	537.52	155.90	1.17e-01	158.65	9.31e-03	169.47	1.02e-03	185.25	1.42e-04	182.49	1.51e-05
	136 (3468)	587.02	167.82	7.03e-02	170.73	6.37e-03	182.09	5.11e-04	199.35	7.49e-05	197.35	5.26e-06
	144 (3888)	576.74	166.39	1.01e-01	169.14	1.35e-02	179.00	1.16e-03	194.94	1.04e-04	192.98	8.69e-06
$m = 23\,954$	152 (4332)	686.12	198.51	4.32e-01	201.82	3.54e-02	212.50	3.44e-03	229.59	3.68e-04	229.24	3.05e-05
200×200	208 (8112)	340.84	142.72	1.61e-01	146.20	1.71e-02	155.67	1.56e-03	164.11	1.56e-04	161.92	1.49e-05
	216 (8748)	347.15	149.65	1.94e-01	150.80	1.87e-02	162.29	1.45e-03	173.86	1.98e-04	175.87	1.90e-05
	224 (9408)	351.16	150.23	1.38e-01	150.46	1.43e-02	162.80	1.49e-03	174.00	1.60e-04	178.40	1.43e-05
	232 (10092)	369.42	157.21	1.30e-01	158.20	1.30e-02	169.99	1.62e-03	181.33	1.26e-04	184.82	1.50e-05
$m = 32\,612$	240 (10800)	389.99	164.06	3.37e-01	164.78	3.19e-02	177.02	2.59e-03	188.83	2.86e-04	193.80	2.63e-05

Table 6: Comparisons between naïve (without QADP) and enhanced (with QADP) update procedure version no. 3 (V3) to perform 1 000 iterations, where an iteration corresponds to a local change in the network, i.e. moving randomly a restricted set of buoys (1, 2 or 3 at random). At each iteration, the different updates are carried out on the same network to ensure a fair comparison. Here usingthe **exponential** function (transition curve) with $\epsilon = \mathbf{10^{-4}}$ and for different sampling levels (δ). For QADP methods, CPU times include the pre-processing procedure used to construct the look-up table. err_{max} corresponds to the maximum error encountered in terms of probability points on all the CPDs of a network and over all iterations (worst-case scenario approach).