Fys4150
Project 4 Figures and stuff

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https://github.com/kaaja/fys4150

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4b

mcs	Eavg	absMavg	Cv	chi
100	-2.000000	1.000000	0.000000	0.000000
1000	-1.972000	0.991500	0.220864	0.022711
10000	-1.991000	0.996950	0.071676	0.009263
100000	-1.995180	0.998475	0.038467	0.004321
1000000	-1.995904	0.998634	0.032701	0.004093
10000000	-1.995942	0.998643	0.032401	0.004074

Table 1: Estimated quantitites

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mcs	Eavg	absMavg	Cv	chi
100	0.201300	0.134106	-100.000000	-100.000000
1000	-1.201518	-0.717034	588.428762	466.254675
10000	-0.249606	-0.171303	123.412688	130.949678
100000	-0.040185	-0.018598	19.901104	7.728200
1000000	-0.003912	-0.002677	1.928037	2.039441
10000000	-0.002028	-0.001736	0.994274	1.573251

Table 2: Percentage deviations from analytical results

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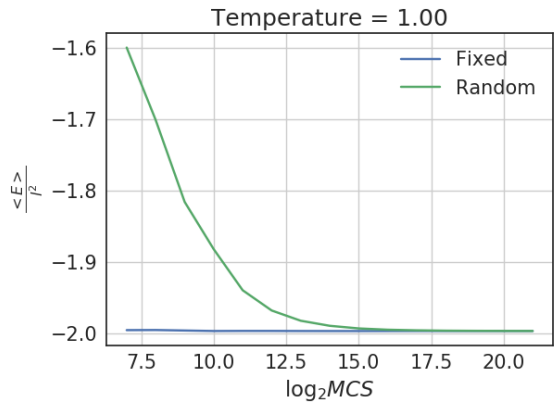

Figure 1: Expected Energy divided by L^2. $T = 1.0$.
Equilibrium reached after 2^{20} *Monte Carlo cycles.*

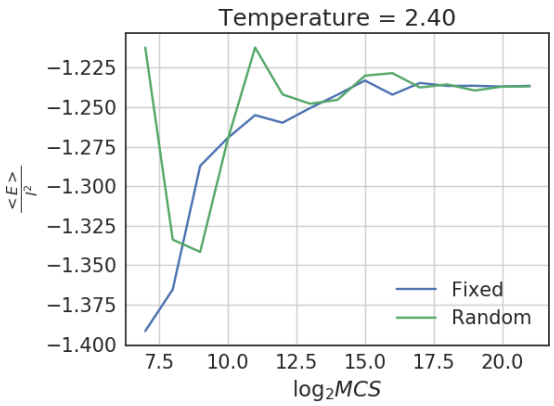

Figure 2: Expected Energy divided by L^2. $T = 2.4$.
Equilibrium reached at same point as for $T = 1$.

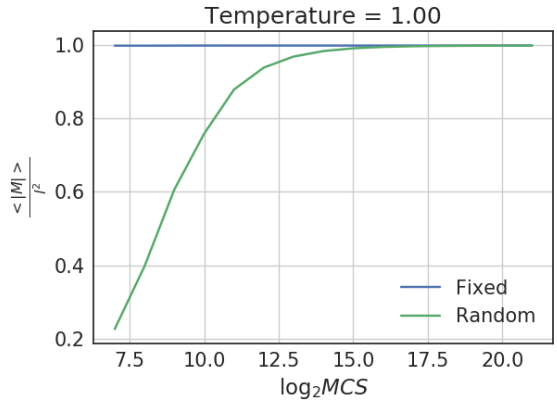

Figure 3: Expected absolute magnetic momentum divided by L^2. $T = 1.0$.
Equilibrium reached at same point as for the energy.

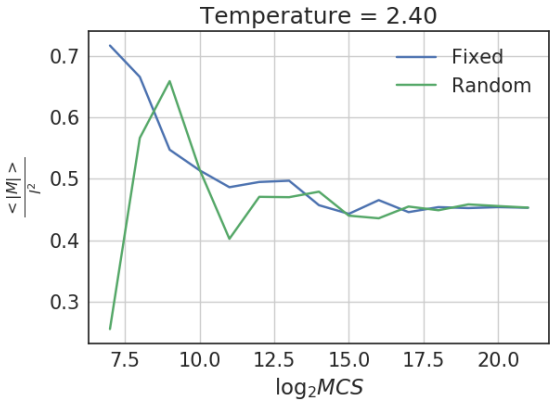

Figure 4: Expected absolute magnetic momentum divided by L^2. $T = 2.4$.
Equilibrium reached at same point as for the others.

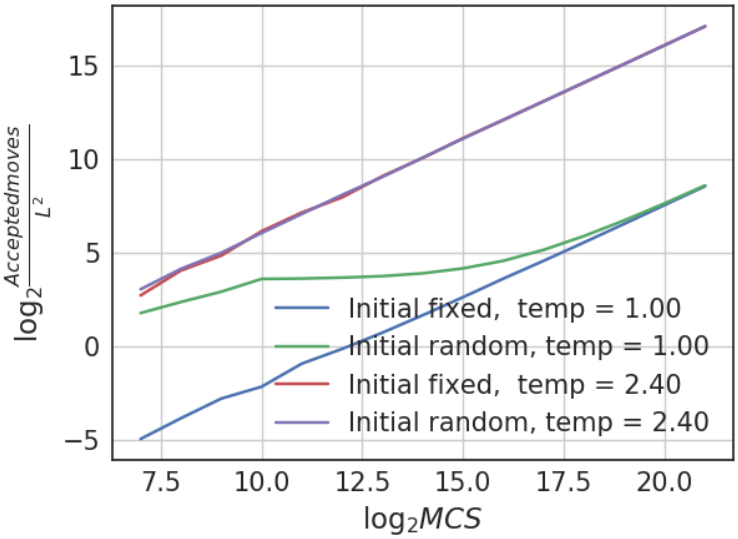

Figure 5: Accepted moved divided by L^2.

2 4d

$\log_2 MCs$	T	μ_E/L^2	$< E > /L^2$	$(\frac{\mu_E/L^2}{<E>/L^2} - 1) \cdot 100$	σ_E^2/L^2	$\frac{<E^2>-<E>^2}{L^2}$	$(\frac{\sigma_E/L^2}{1/L^2(<E^2>-<E>^2)} - 1) \cdot 100$	$< \lvert M \rvert > /L^2$	$\frac{<\lvert M \rvert^2>/L^2-<\lvert M \rvert>^2}{L^2}$	Cv/L^2	χ/L^2
11.0	1.0	-1.997061	-1.99706	0.000002	0.023692	0.023692	-0.000002	0.999246	0.001613	0.023692	0.001613
11.0	2.4	-1.255015	-1.99706	-37.156904	9.419375	0.023692	39657.141668	0.999246	0.001613	0.023692	0.001613

Table 3: Statistics. Fixed initial config.

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$\log_2 MCs$	T	μ_E/L^2	$< E > /L^2$	$(\frac{\mu_E/L^2}{<E>/L^2} - 1) \cdot 100$	σ_E^2/L^2	$\frac{<E^2>-<E>^2}{L^2}$	$(\frac{\sigma_E/L^2}{1/L^2(<E^2>-<E>^2)} - 1) \cdot 100$	$< \lvert M \rvert > /L^2$	$\frac{<\lvert M \rvert^2>/L^2-<\lvert M \rvert>^2}{L^2}$	Cv/L^2	χ/L^2
11.0	1.0	-1.939932	-1.939932	0.000002	6.746561	6.746561	4.565043e-07	0.879219	26.793008	6.746561	26.793008
11.0	2.4	-1.212202	-1.939932	-37.513150	8.755345	6.746561	2.977495e+01	0.879219	26.793008	6.746561	26.793008

Table 4: Statistics. Random initial config.

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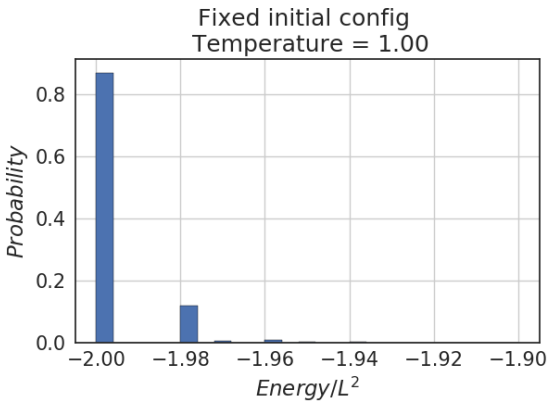

Figure 6: Probability distribution. Fixed intital $T = 1$.

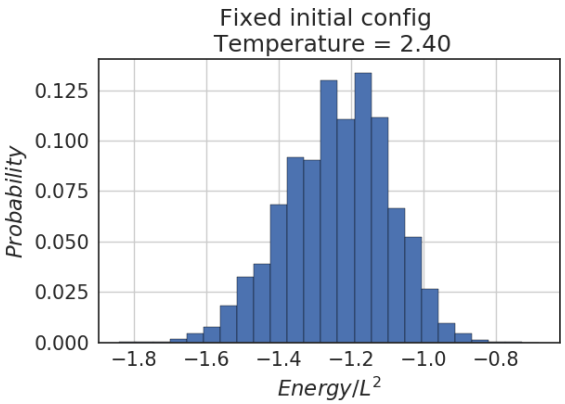

Figure 7: Probability distribution. Fixed intital $T = 2.4$..

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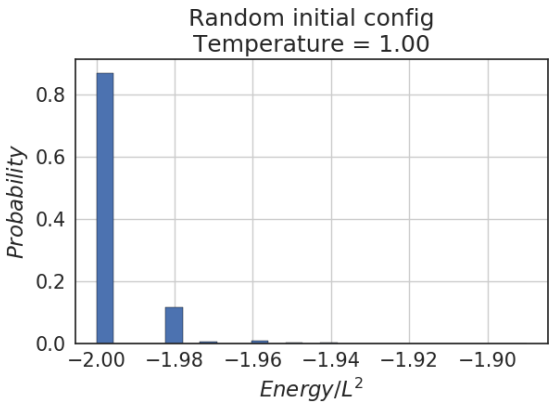

Figure 8: Probability distribution. Random intital $T = 1$.

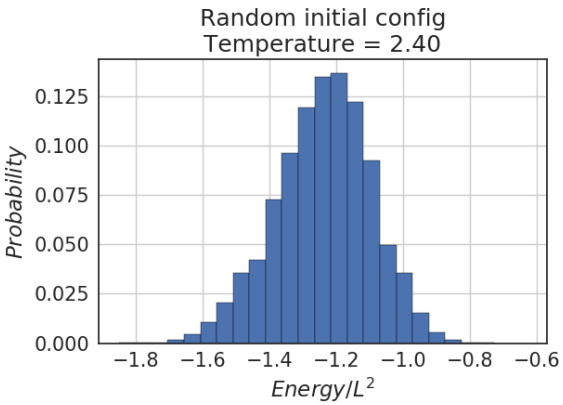

Figure 9: Probability distribution. Random intital $T = 2.4$.

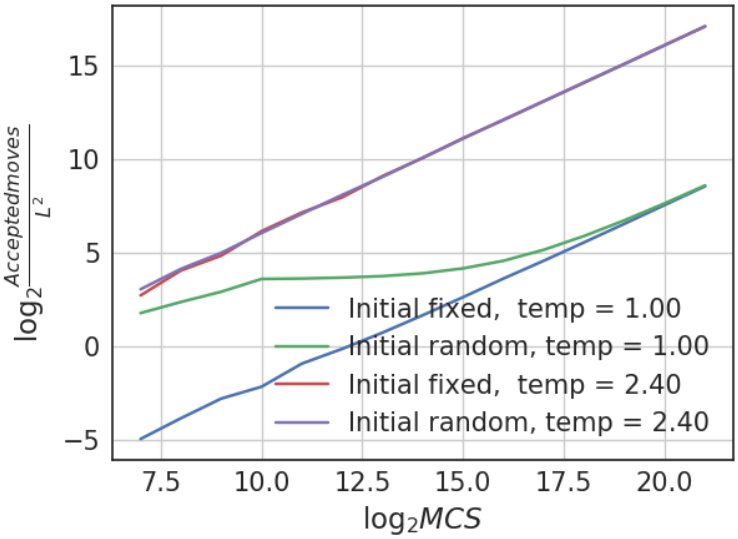

Figure 10: Accepted moved divided by L^2.

3 4e

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$\log_2 MCs$	T	μ_E/L^2	$< E > /L^2$	$(\frac{\mu_E/L^2}{<E>/L^2} - 1) \cdot 100$	σ_E^2/L^2	$\frac{<E^2> - <E>^2}{L^2}$	$(\frac{\sigma_E/L^2}{1/L^2(<E^2> - <E>^2)} - 1) \cdot 100$	$< \lvert M \rvert > /L^2$	$\frac{<\lvert M^2 \rvert> /L^2 - <\lvert M \rvert>^2}{L^2}$	C_V/L^2	χ/L^2
11.0	1.0	-1.997061	-1.99706	0.000002	0.023692	0.023692	-0.000002	0.999246	0.001613	0.023692	0.001613
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Table 5: something

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