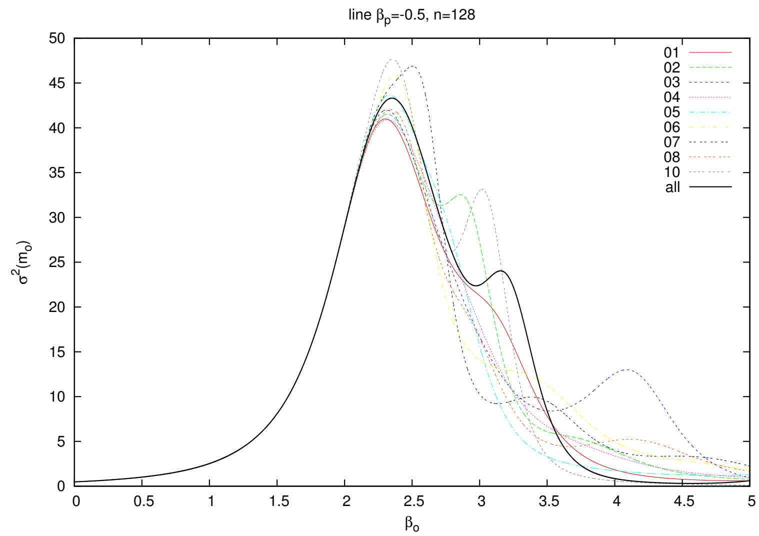
Due to investigate the hb-model we have performed following simulations:

1. 10 runs, $2d$ $n = 1024$, one parameter: m
2. 10 runs, $3d$ $n = 1024$, one parameter: $m = m_p + m_o$
3. 10 runs, $3d$ $n = 1024$, one parameter: m_p, $\beta_o = 0.0$
4. 10 runs, $3d$ $n = 1024$, one parameter: m_o, $\beta_p = 0.0$
5. 10 runs, $3d$ $n = 256$, one parameter: m_o, $\beta_p = -0.5$
6. 10 runs, $3d$ $n = 256$, one parameter: m_o, $\beta_p = -1.0$
7. 10 runs, $3d$ $n = 256$, one parameter: m_o, $\beta_p = -2.0$
8. 10 runs, $3d$ $n = 128$, two parameter: m_p and m_o

We have used the data from simulation: 1, 2, 3 and 8.

It turned out, that it is very difficult to get good data simulating with parameter m_o. Unfortunately we cannot use the data from simulation up to $n = 256$ (5,6,7), for one parameter. See Figures 1,2 and 4. In this case the algorithms has produces more then 180000000 tours for each of the runs. To elucidate the problem I'd like to mention that for 'easy' problems like pulling saw we have 'good' (converged) data with numbers of tours of the order 10^5.

The data from the two-parameters simulation for $n = 128$ seems to be converged, but we cannot use it for $\beta_o > 2.0$, see Figure **??**. This is the reason why we are not able to analyze the interesting part of the pseudo-phase diagram and restrict ourself to the quadrant $0.0 - 2.0$ in both betas.



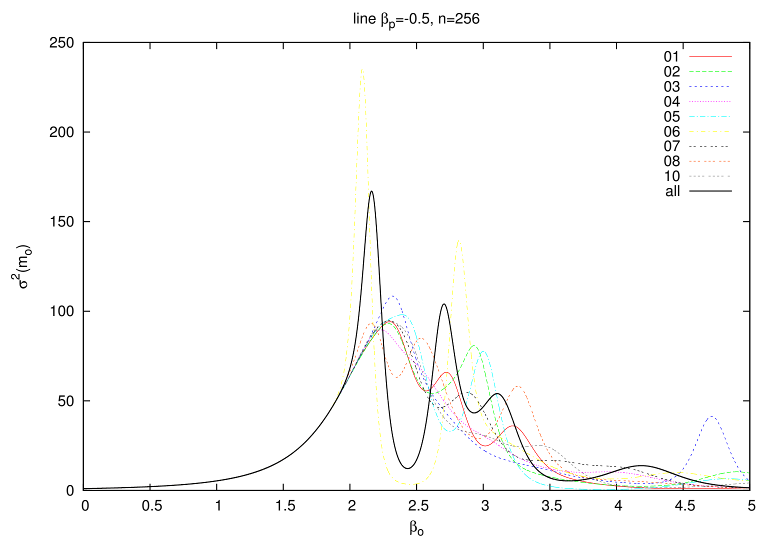


Figure 1: Fluctuation in m_o for $\beta_p = -0.5$ for length $n = 128$ (top) and $n = 256$ (bottom). Both length taken from the same data.

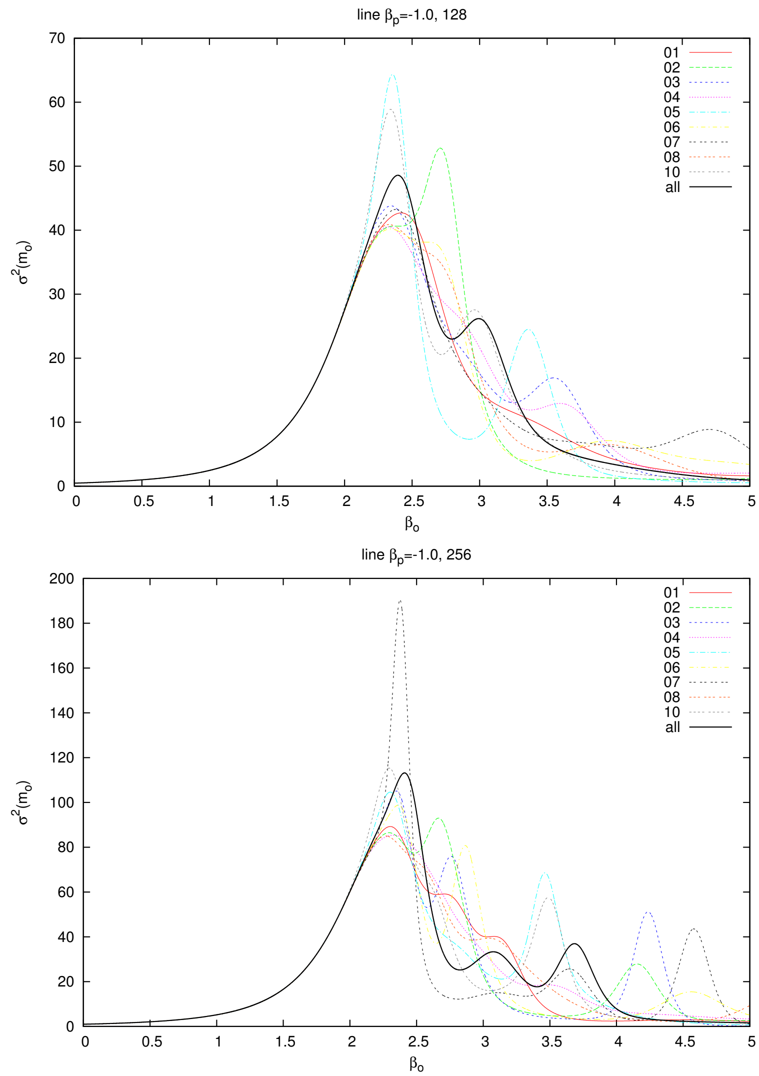


Figure 2: Fluctuation in m_o for $\beta_p = -1.0$ for length $n = 128$ (top) and $n = 256$ (bottom). Both length taken from the same data.

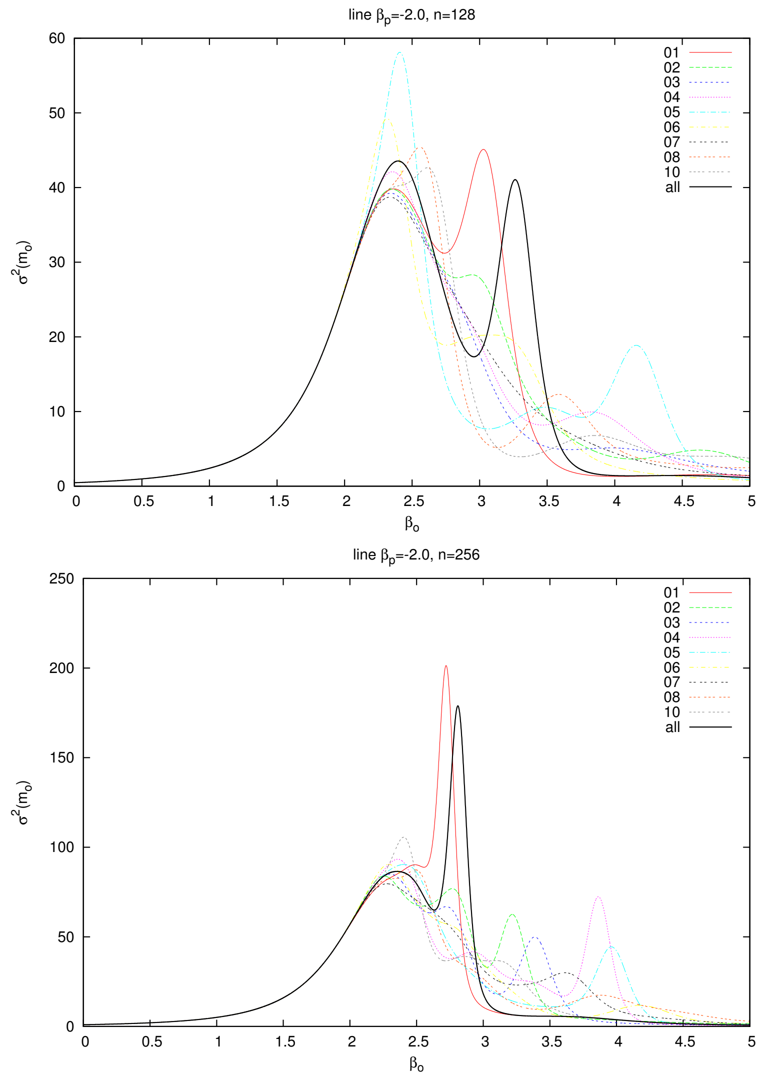


Figure 3: Fluctuation in m_o for $\beta_p = -2.0$ for length $n = 128$ (top) and $n = 256$ (bottom). Both length taken from the same data.

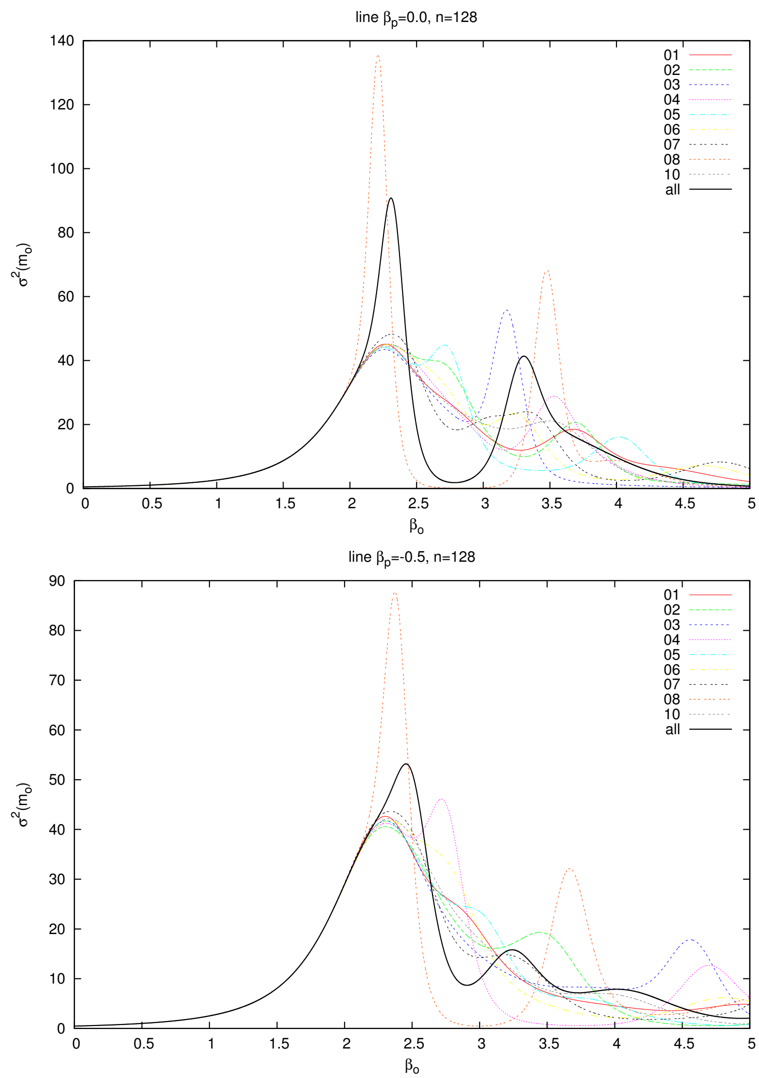


Figure 4: Fluctuation in m_o for $\beta_p = 0.0$ (top) and $\beta_p = -0.5$ (bottom) for length $n = 128$. Both length taken from the same data (simulation 8).