Monte Carlo Simulation of Polymers

$$\langle R_{ee}^2 \rangle \propto N^{2\nu}$$

1. Explain RW scaling and Flory argument for critical exponents in polymers (scaling with N), simulate an off-lattice Random Walk in 2 and 3 dimensions and show that ν=0.5 in both cases.

→ Moik

2. Write a Monte Carlo code to simulate a 2d *off-lattice* polymer (with fixed bond length and "hard" monomers) via the pivot algorithm and demonstrate that ν=0.75.

→ Wittoff

3. Write a Monte Carlo code to simulate a 3d self-avoiding walk (SAW) via the pivot algorithm and demonstrate that ν=0.588.

→ Gatilunis

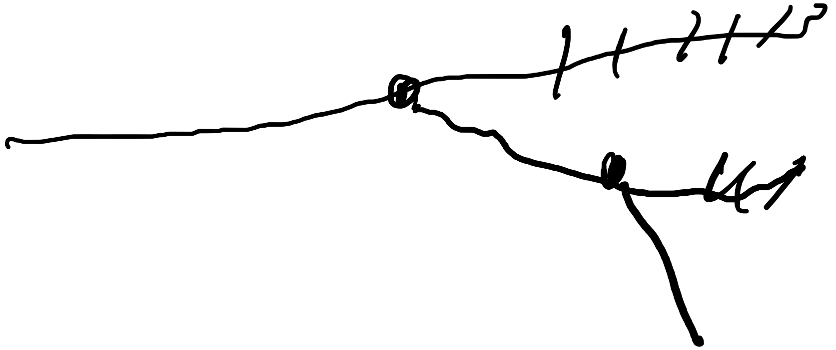
4. Analyze knots in 3d configurations from 1 and 3. Explain algorithms and results.

→ Greiner

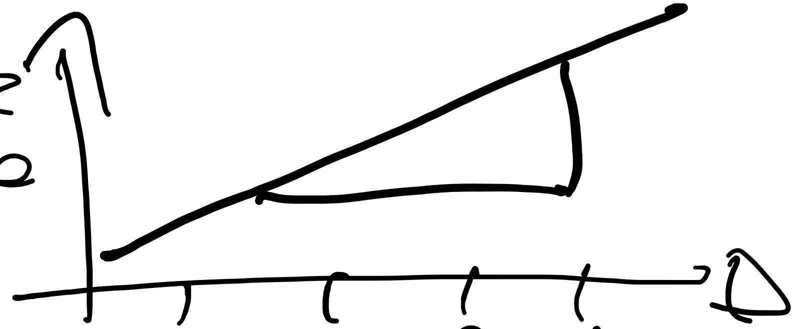
5. Write a Monte Carlo code to simulate a 2d interacting self-avoiding walks via pivot-algorithm and determine its Theta-point (by plotting <Ree^2> as a function of temperature →"Wendepunkt")

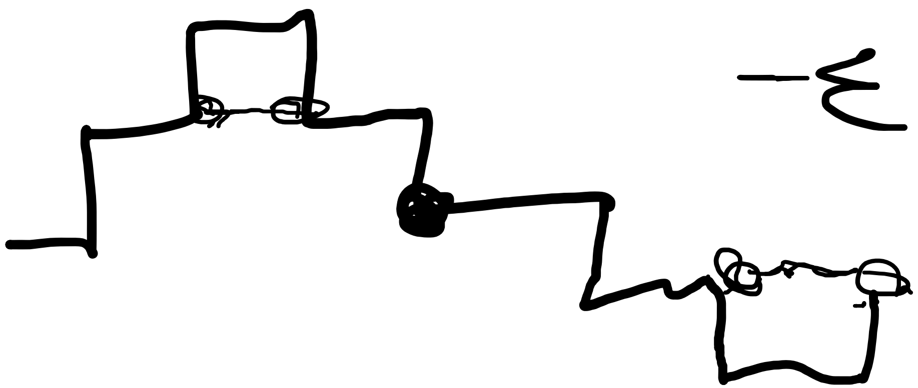
→ Schmitt

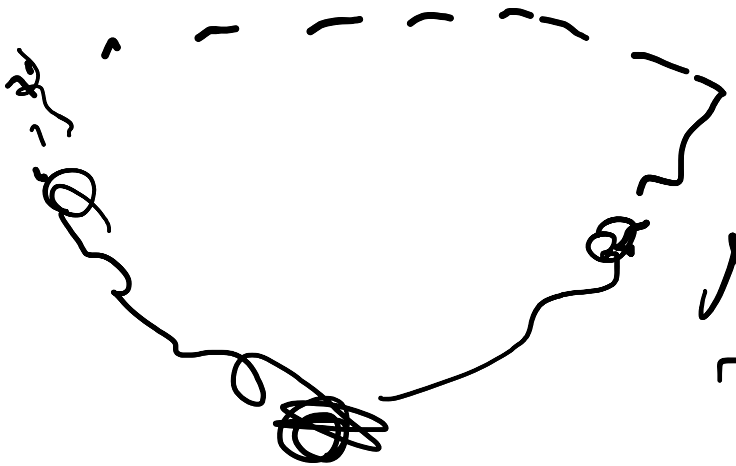
pivot



Determination of r;







Alexander-Polygon

Theta übergang ISAW

hohe Temp niedrige