

Physics of monte carlo simulations, 8, 5, 2024  
MATR323

- ① Explain random walks and what it means when they are continuous or lattice based. Also what does it mean when a walk is b) persistent, c) biased
- ② Explain the idea and principle of weighting in particle transport or in the Rosenbluth-Rosenbluth method. Explain how the weight is calculated in either method.
- ③ Illustrate and explain how KMC works. You get the rates  $\Gamma_1 = 0,5$ ,  $\Gamma_2 = 0,6$  and  $\Gamma_3 = 0,4$ .
- ④ How can the metropolis monte carlo method compute states in an NVT ensemble, How should you change this to compute a NPT ensemble?
- ⑤ Chose one of the following:
  - a) Derive the metropolis algorithm as thoroughly as in the lecture notes as well as you remember.
  - b) Nijo kvantum monte carlo metropolis skit.

Mark V21! Man fick inte ta med tenten så frågorna är inte ord för ord. Uppgifterna är dock så godt som gott det samma som frågades i provet.