Problem set 4 – Quark Gluon Plasma Physics – SS 2023

Discussion in the lecture: Friday May 19

4.1 Glauber Monte Carlo Calculation

In this problem we'll run a Glauber Monte Carlo calculations for collisions of lead nuclei (^{208}Pb). The jupyter notebook glauber_mc_to_be_completed.ipynb contains a code skeleton with missing pieces.

a) Complete the main event loop by adding code at places marked with *add code here*.

b) Run the code for 10.000 Pb-Pb collisions (this may take a few minutes). Plot N_{part} as a function of the impact parameter b.

c) Calculate the average N_{part} and N_{coll}, and the average impact parameter b for the 0–10% centrality class by completing the corresponding cell.

d) Calculate the total inelastic Pb-Pb cross section following the description in the notebook.