Homework

1. Write a code to calculate $\Omega(N)$ in the context of flipping coins and plot them when N=10, 15, 30, 100.

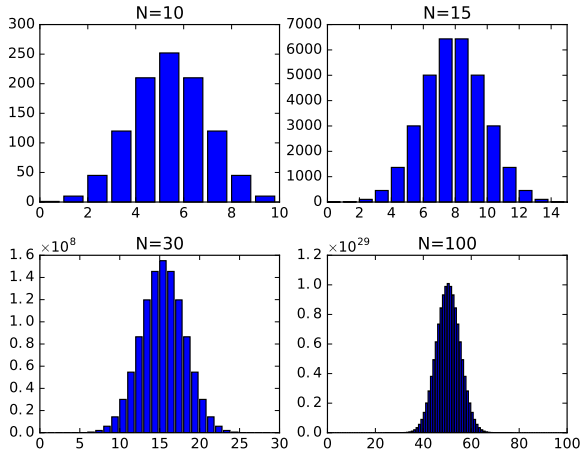

Figure 0.1: The number of Ω as a function of N in the game of flipping coins.

2. Write a code to calculate $\Omega(N)$ in the context of Einstein solid and plot them when N=10, 15, 30, 100 and q from 0 to 10.

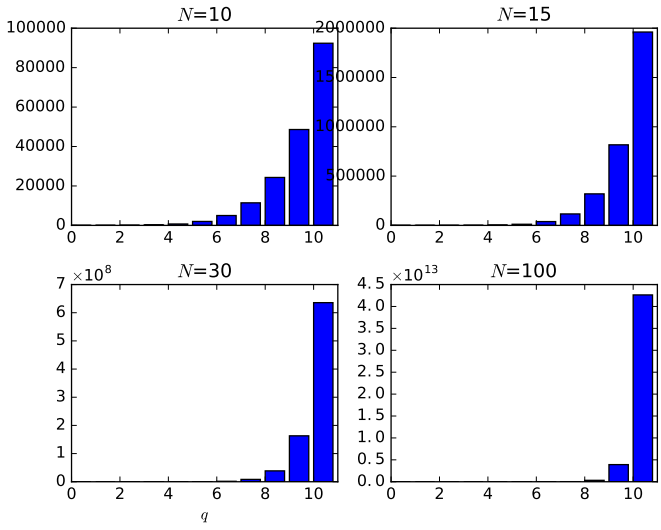

Figure 0.2: The number of Ω as a function of N in an Einstein solid.

3. Write a code to calculate Ω as a function of q_A, when N_A=[300, 600, 3000, 6000], N_B=[200, 400, 2000, 4000], and q=100, plot them and try to find some tendency when N increases (hint: 4 plots).

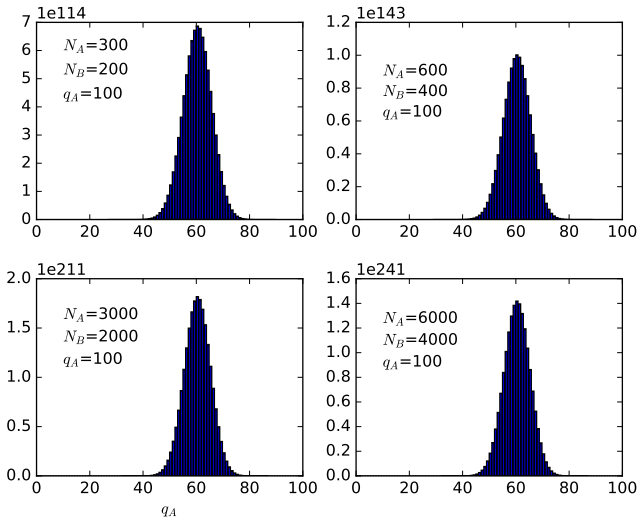

Figure 0.3: Ω as a function of N in two interacting Einstein solids.

4. Write a code to calculate the probability of $\Omega(q_A)$, when N_A=[300, 3000], N_B=[200, 2000], for q=[100, 1000], plot them and try to explain the differences. (hint: 2 plots)

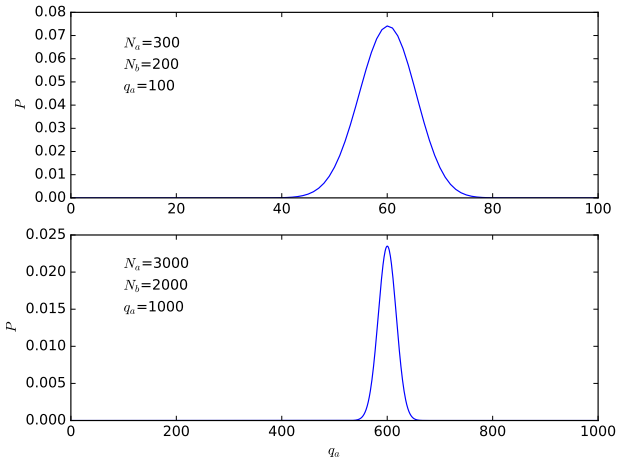

Figure 0.4: Probability distribution of $\Omega(N)$ in two interacting Einstein solids for different q values.