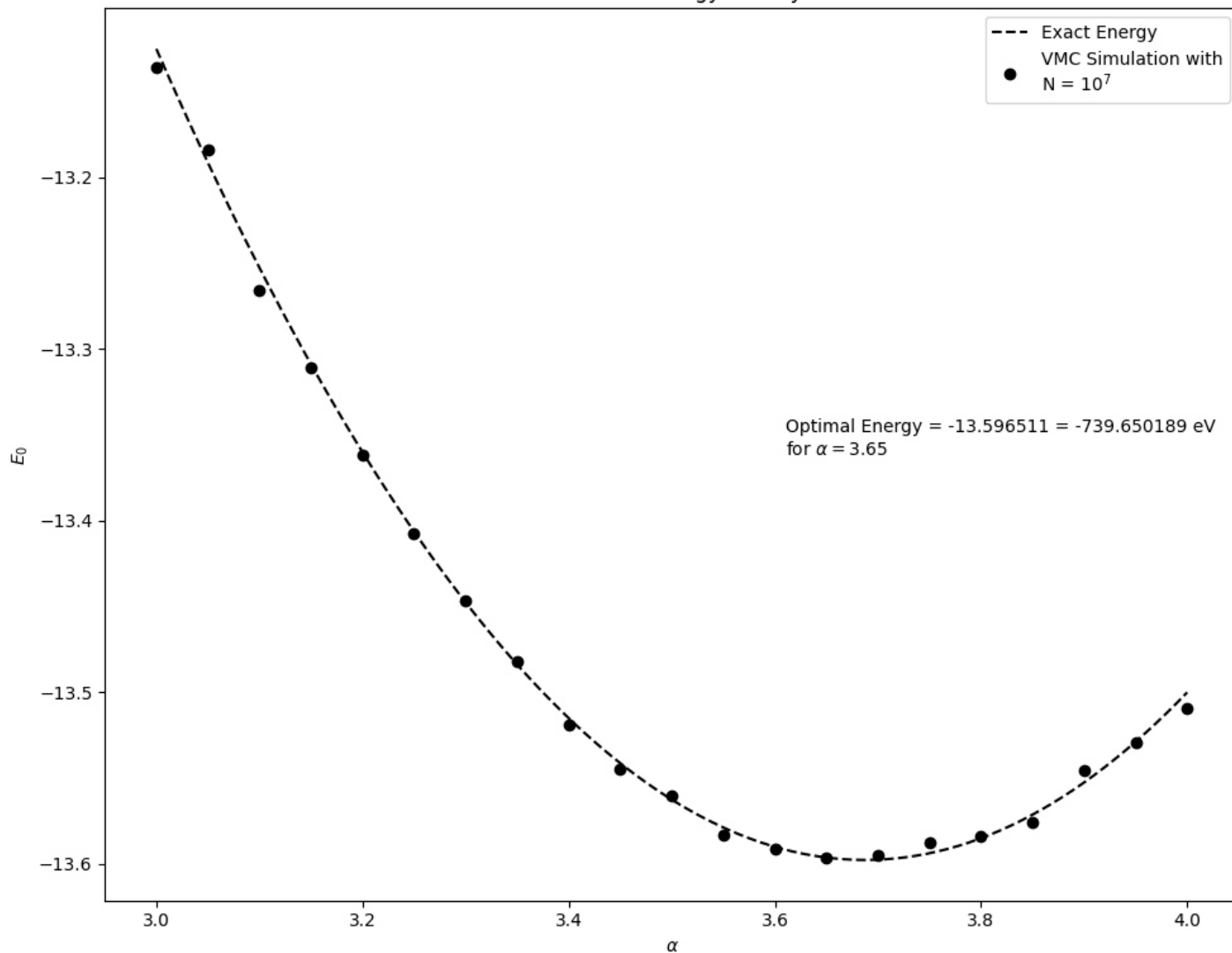


Plots for Exercise 1: Question 7: Beryllium Ansatz 1

VMC Simulation for Ground State energy of Beryllium Atom for Ansatz 1



Optimal $r_{12} = 0.599$

Table 7: Beryllium: Ansatz 1

alpha	energy	variance
3.0000	-13.1358	15.8607
3.0500	-13.1840	13.9909
3.1000	-13.2660	14.4176
3.1500	-13.3108	12.4496
3.2000	-13.3618	11.9039
3.2500	-13.4071	10.9382
3.3000	-13.4466	9.3866
3.3500	-13.4817	9.9733
3.4000	-13.5192	9.8022
3.4500	-13.5449	7.4565
3.5000	-13.5605	6.5936
3.5500	-13.5830	5.5138
3.6000	-13.5909	4.8411
3.6500	-13.5965	4.1125
3.7000	-13.5947	4.2705
3.7500	-13.5877	4.4537
3.8000	-13.5842	3.5390
3.8500	-13.5758	3.2255
3.9000	-13.5454	3.7116
3.9500	-13.5292	3.8582
4.0000	-13.5096	4.0880

Ansatz 2

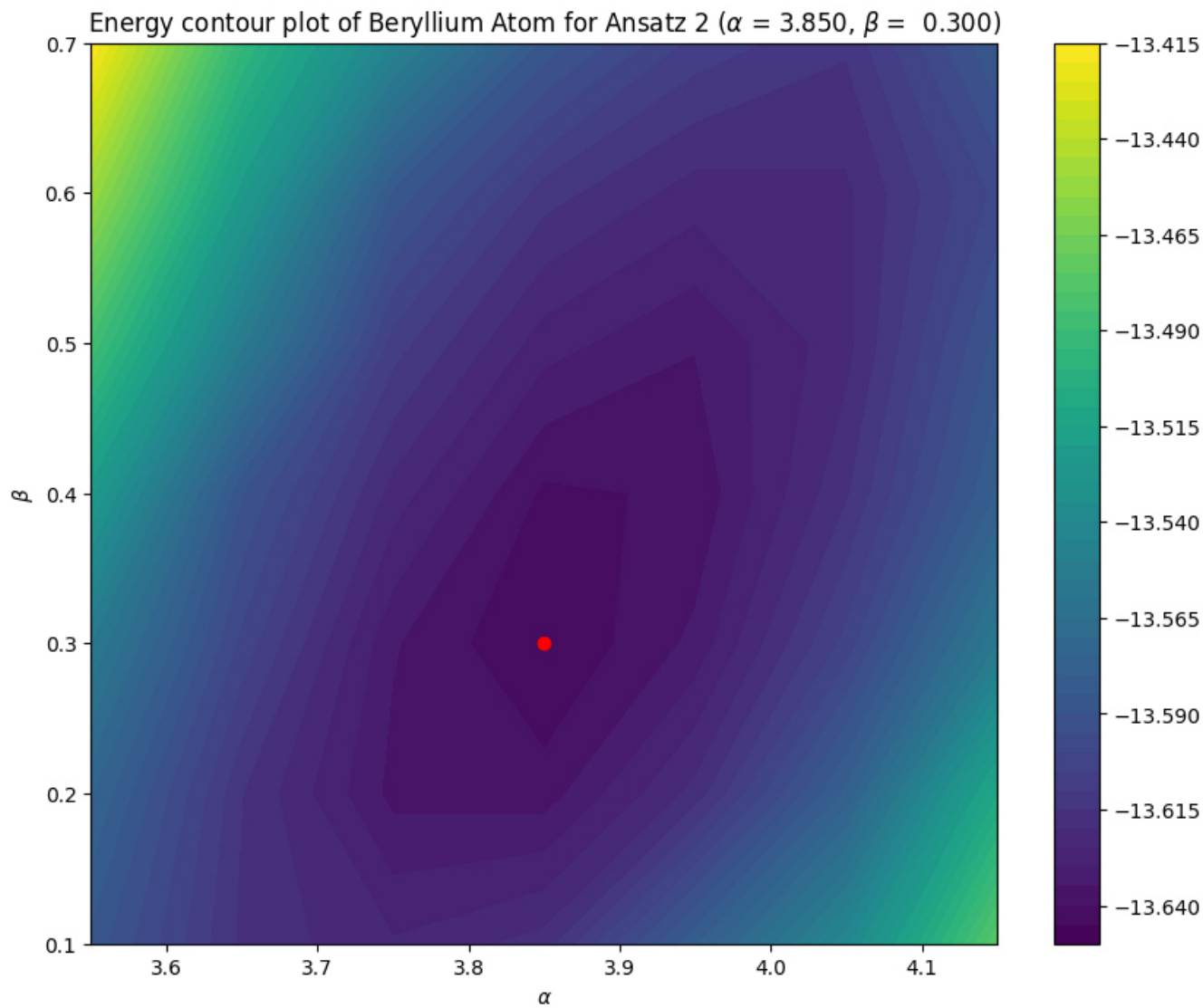


Table 8: Beryllium: Ansatz 2

alpha	beta	energy	variance
3.7500	0.2000	-13.6367	1.6719
3.7500	0.3000	-13.6345	1.4603
3.7500	0.4000	-13.6223	1.5209
3.8500	0.2000	-13.6378	1.5994
3.8500	0.3000	-13.6454	0.7089
3.8500	0.4000	-13.6411	0.7152
3.9500	0.2000	-13.6183	0.9824
3.9500	0.3000	-13.6338	0.5907
3.9500	0.4000	-13.6391	0.3686

Optimal $r_{12} = 0.611$

Ansatz 3

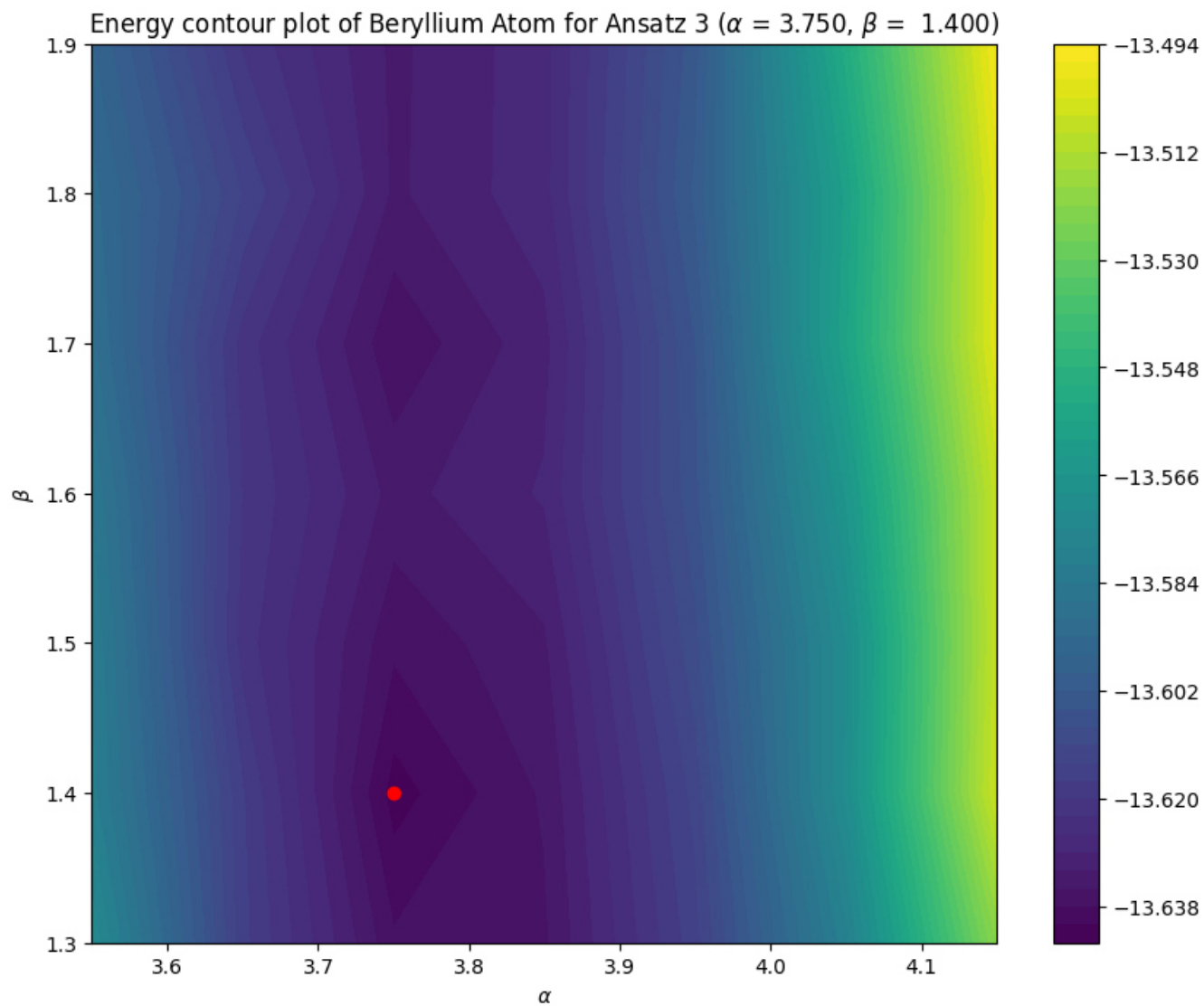


Table 9: Beryllium: Ansatz 3

alpha	beta	energy	variance
3.6500	1.3000	-13.6161	2.1034
3.6500	1.4000	-13.6167	2.2827
3.6500	1.5000	-13.6215	2.3724
3.7500	1.3000	-13.6375	1.2061
3.7500	1.4000	-13.6425	1.2529
3.7500	1.5000	-13.6373	1.1888
3.8500	1.3000	-13.6357	0.5466
3.8500	1.4000	-13.6346	0.5781
3.8500	1.5000	-13.6325	0.9478

Optimal $r_{12} = 0.609$