Plots and Data for Variational Monte Carlo on Harmonic Oscillator and Hydrogen Atom
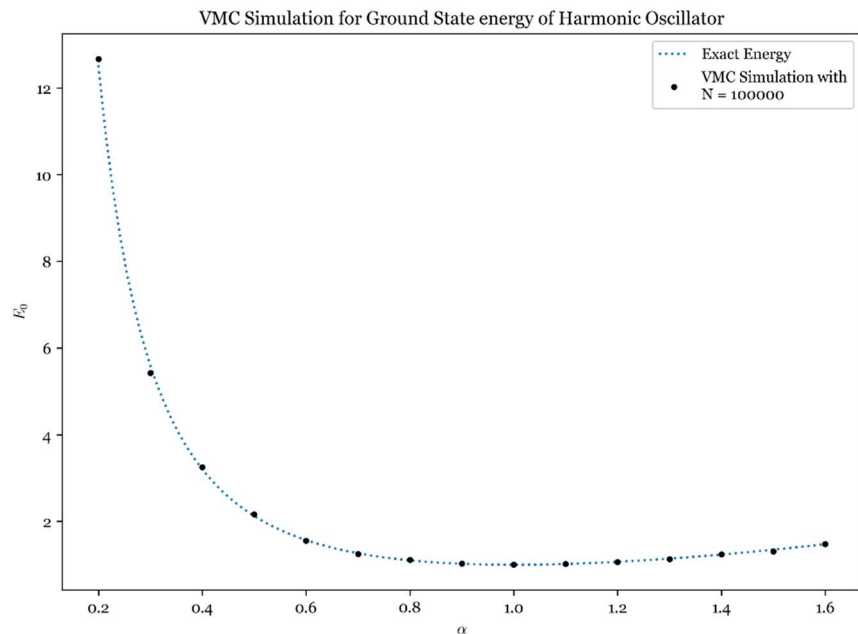

VMC Simulation for Ground State energy of Harmonic Oscillator

Table 1: VMC Data for Harmonic Oscillator

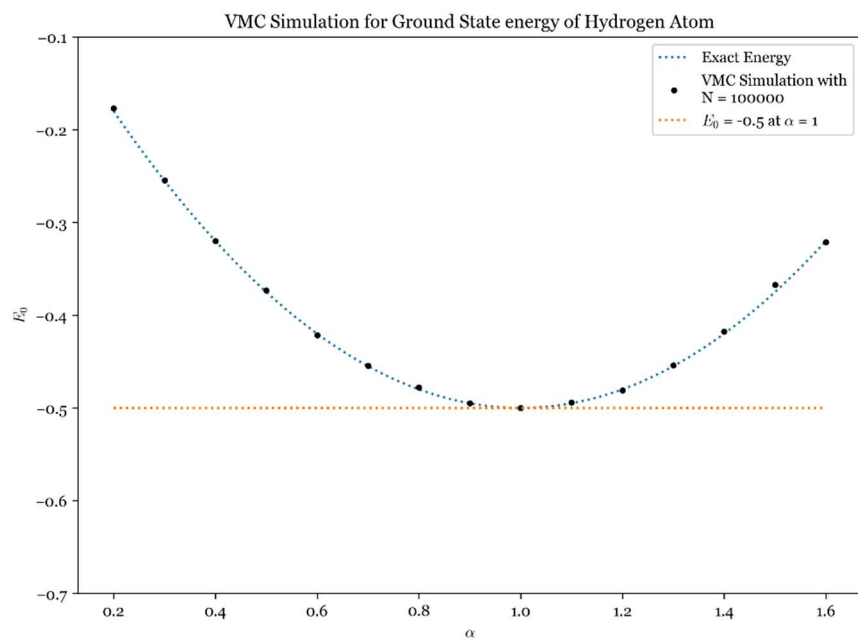| α	Mean Energy(H)	Variance(σ^2)
0.20	12.6682	325.0595
0.30	5.4217	54.2352
0.40	3.2513	19.8328
0.50	2.1693	7.6053
0.60	1.5505	2.8090
0.70	1.2530	1.2075
0.80	1.1138	0.4540
0.90	1.0254	0.0947
1.00	1.0000	0.0000
1.10	1.0206	0.0702
1.20	1.0667	0.2785
1.30	1.1269	0.6245
1.40	1.2448	1.0149
1.50	1.3118	1.6763
1.60	1.4789	2.2766

VMC Simulation for Ground State energy of Hydrogen Atom

Table 2: VMC Data for Hydrogen Atom

α	Mean Energy(H)	Variance(σ^2)
0.20	-0.1770	0.0214
0.30	-0.2548	0.0390
0.40	-0.3199	0.0553
0.50	-0.3733	0.0613
0.60	-0.4214	0.0599
0.70	-0.4544	0.0397
0.80	-0.4781	0.0231
0.90	-0.4949	0.0073
1.00	-0.5000	0.0000
1.10	-0.4942	0.0119
1.20	-0.4810	0.0640
1.30	-0.4541	0.1371
1.40	-0.4176	0.3505
1.50	-0.3672	0.5220
1.60	-0.3212	0.8934