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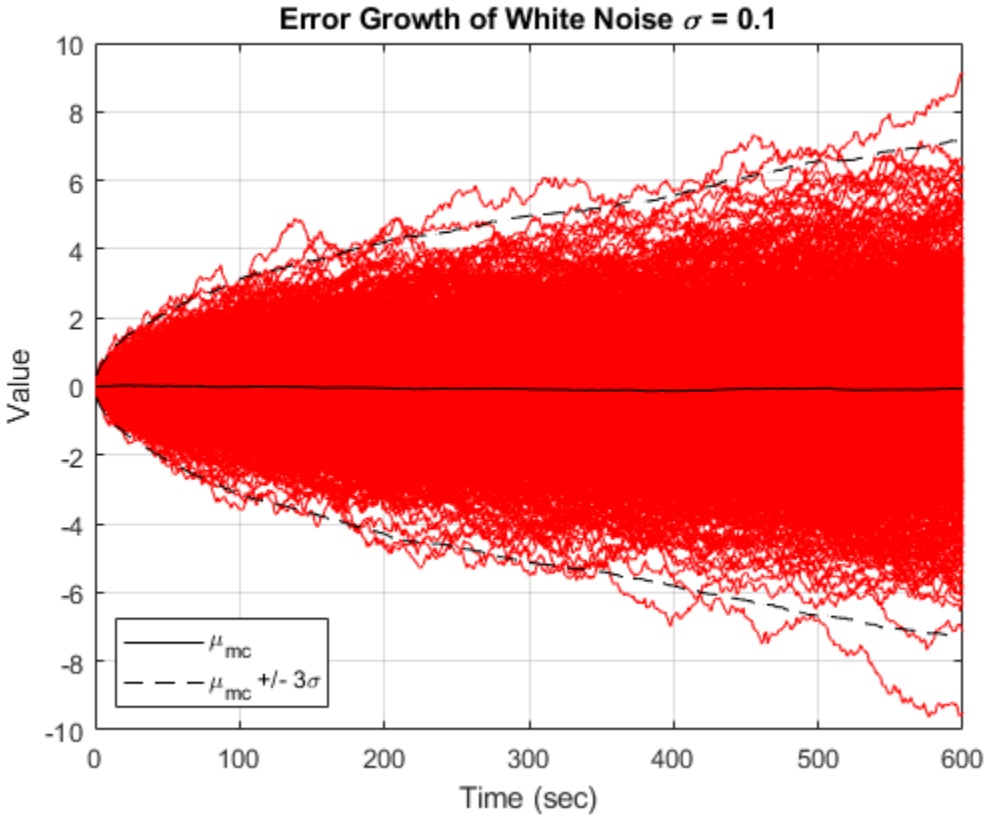
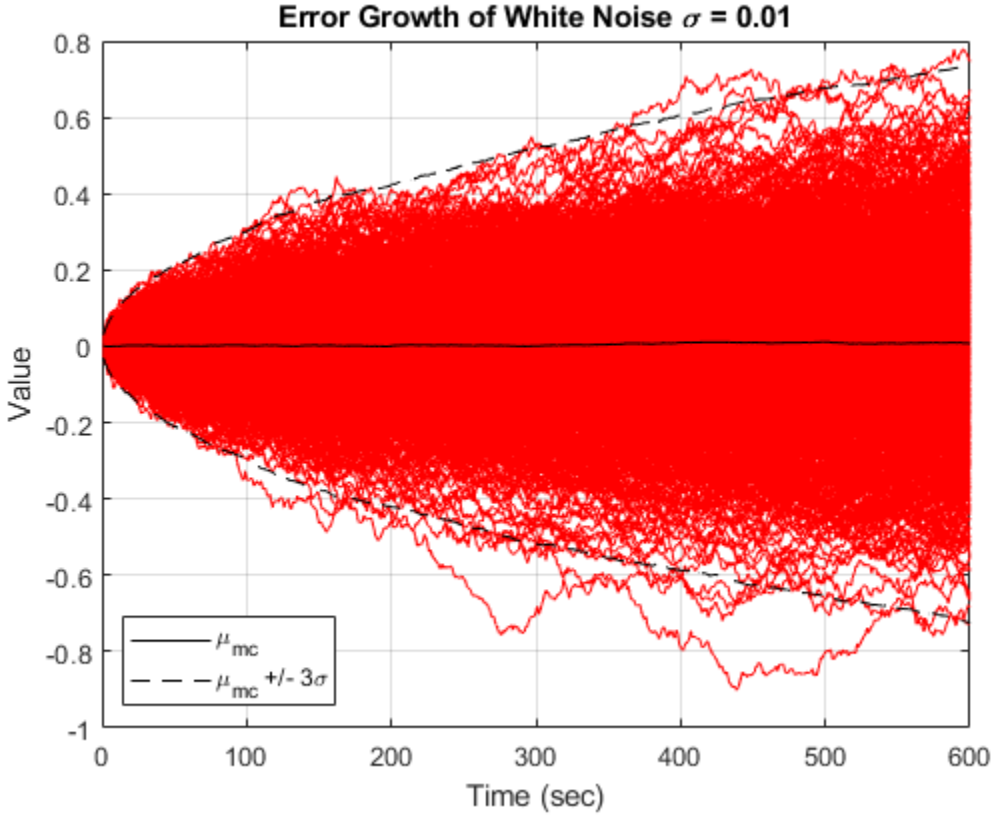
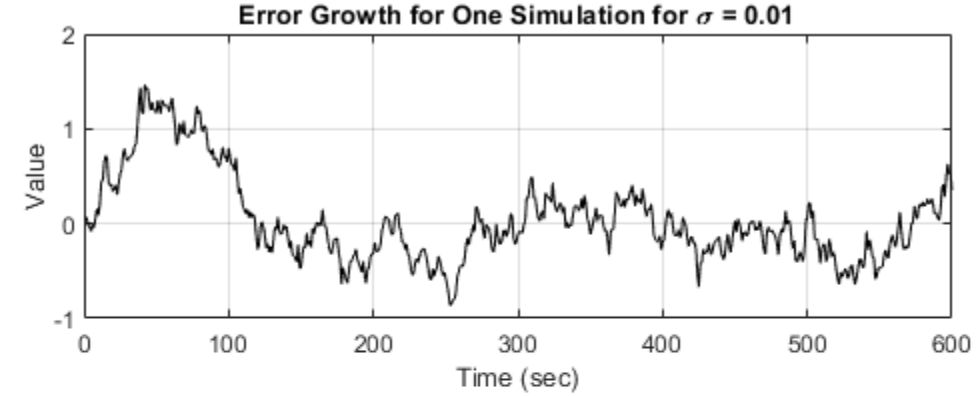
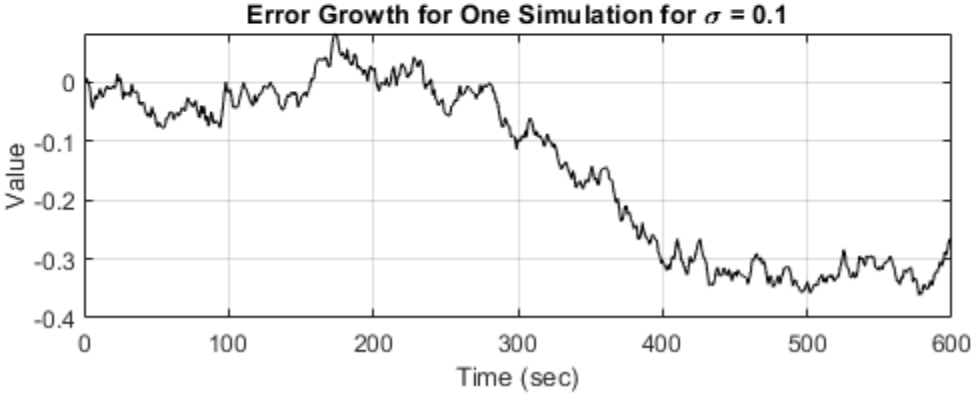
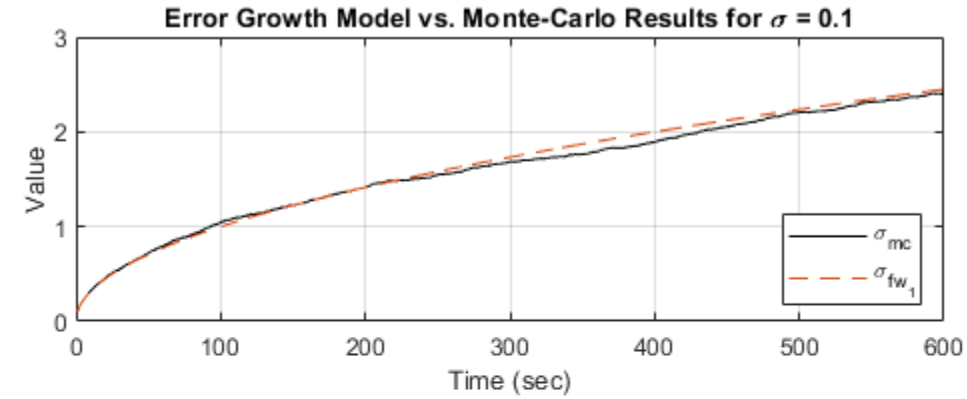
Question 2 - Part A

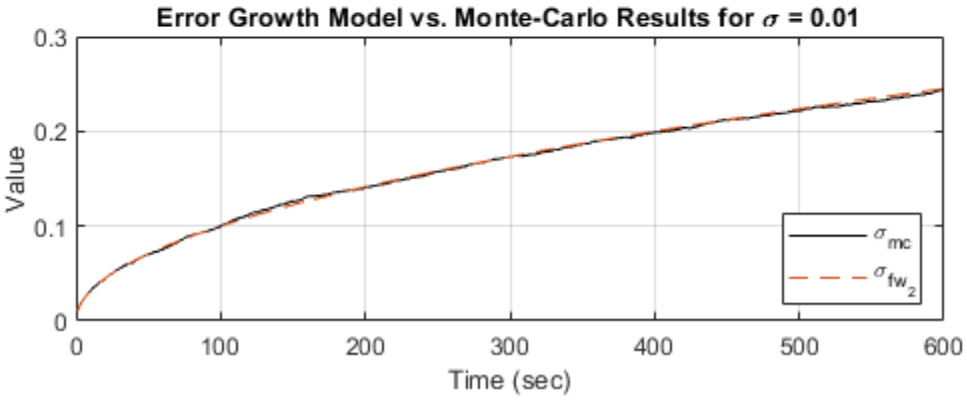



Error Growth of White Noise σ = 0.01
Value
Time (sec)
μ_{mc}
μ_{mc} +/- 3σ

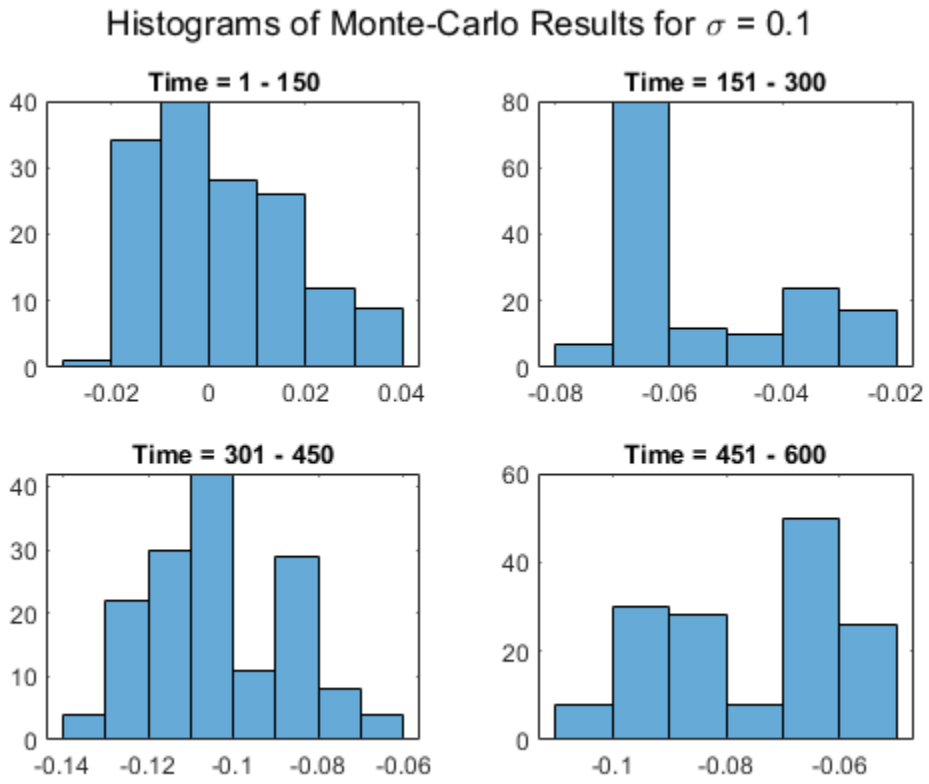

Error Growth for One Simulation for σ = 0.01
Value
Time (sec)

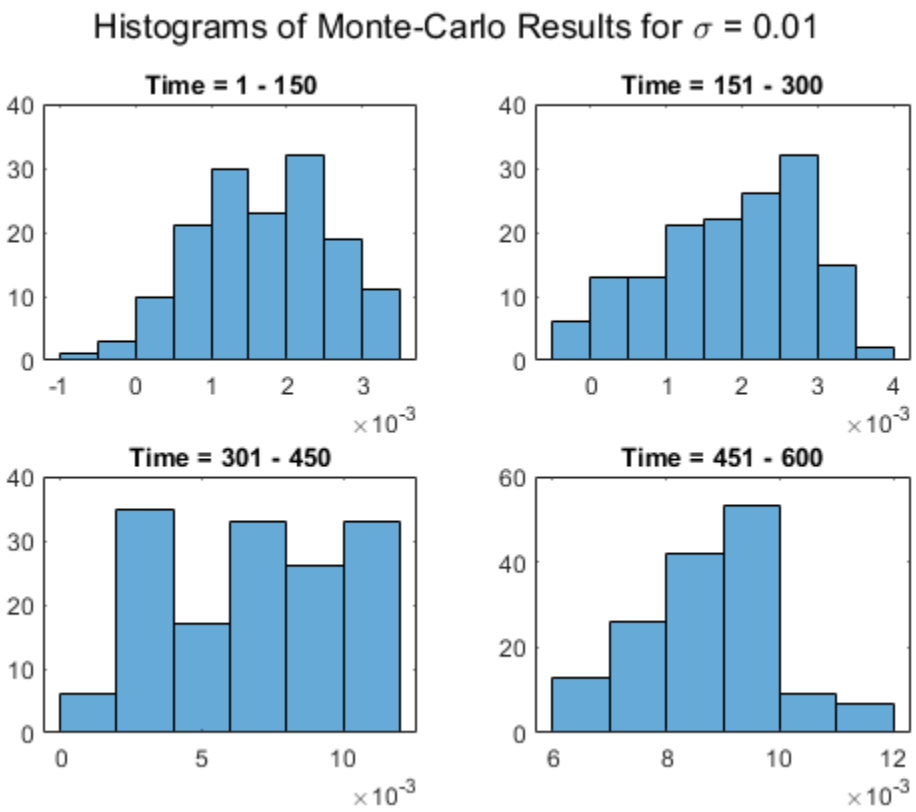

Error Growth for One Simulation for σ = 0.1
Value
Time (sec)


Error Growth Model vs. Monte-Carlo Results for σ = 0.1
Value
Time (sec)
σmc
σfw1
0
1
2
3
0
100
200
300
400
500
600

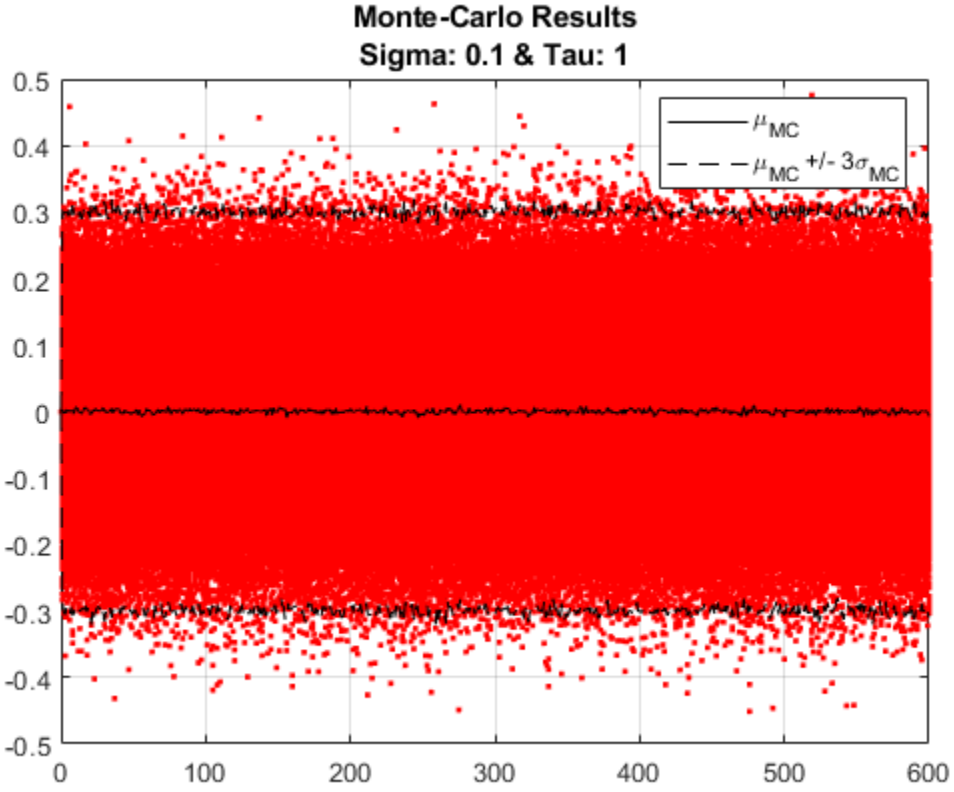

Error Growth Model vs. Monte-Carlo Results for σ = 0.01
Value
Time (sec)
σmc
σfw2
0
0.1
0.2
0.3
0
100
200
300
400
500
600

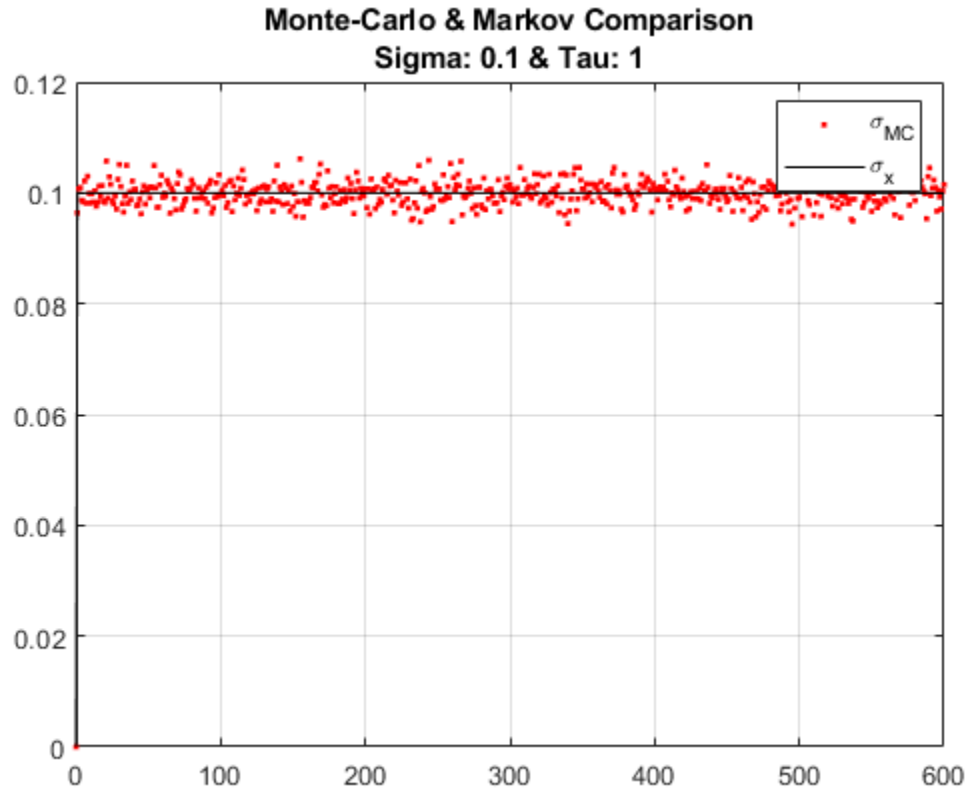
Question 2 - Part B

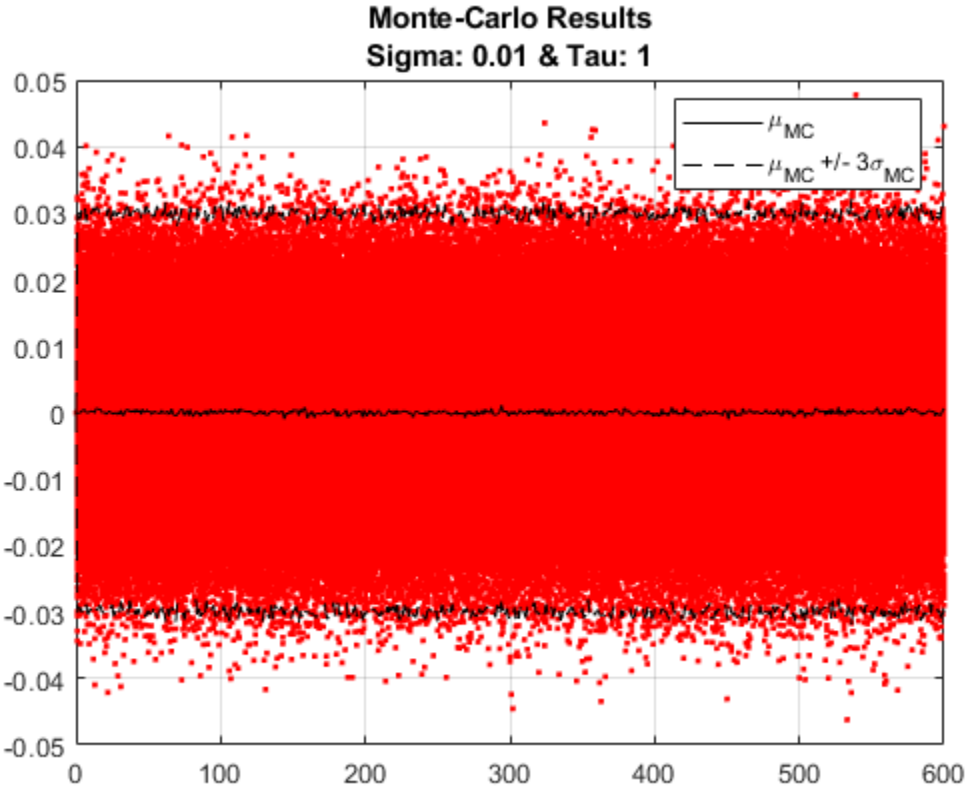


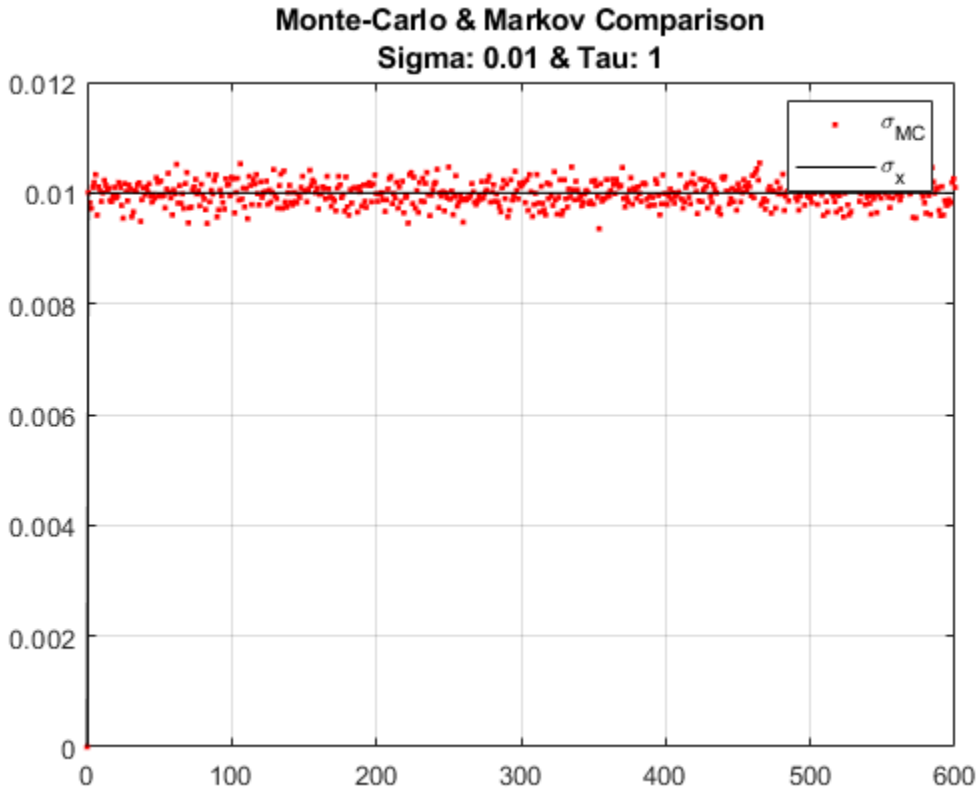

Histograms of Monte-Carlo Results for σ = 0.01
Time = 1 - 150
Time = 151 - 300
Time = 301 - 450
Time = 451 - 600
$\times 10^{-3}$

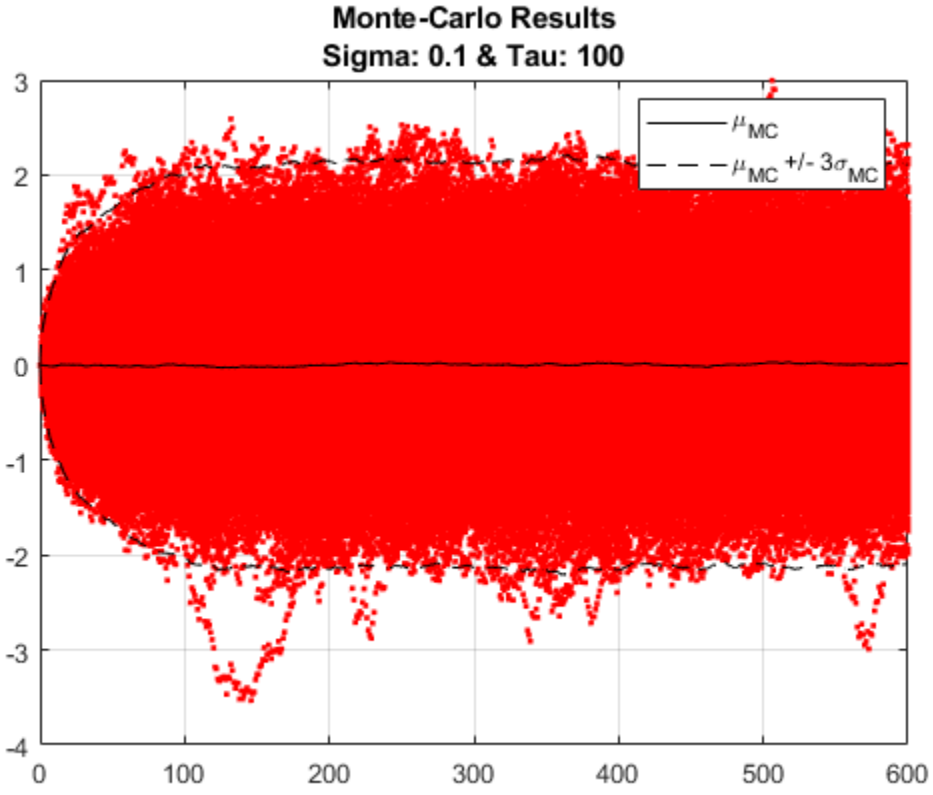
Question 2 - Part C

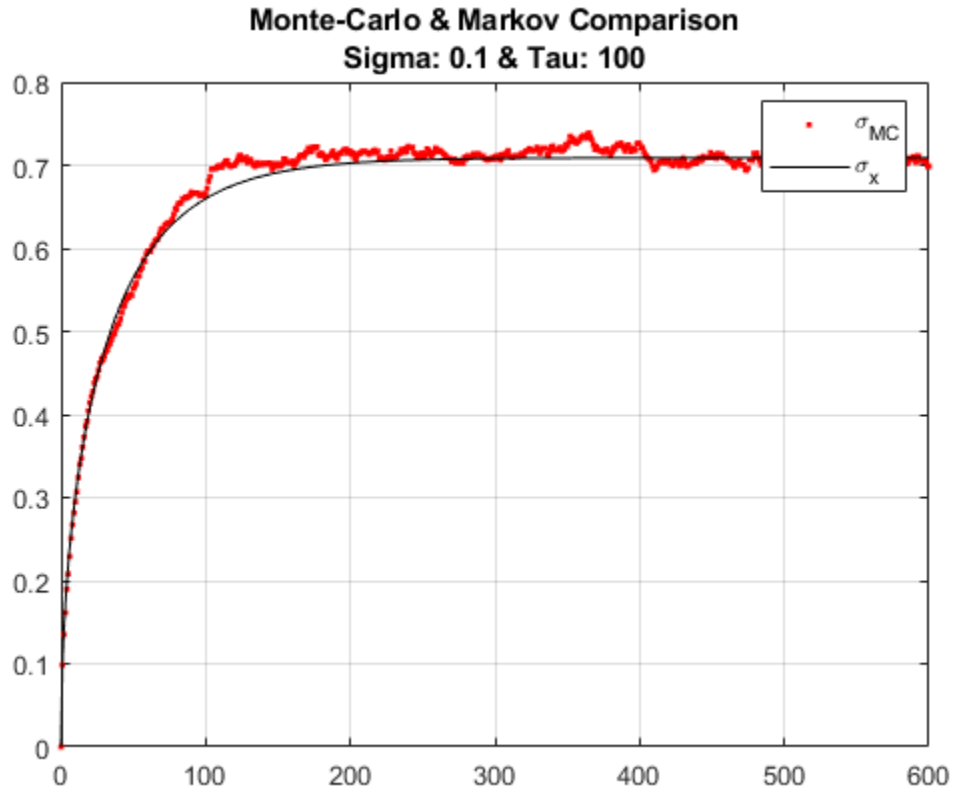


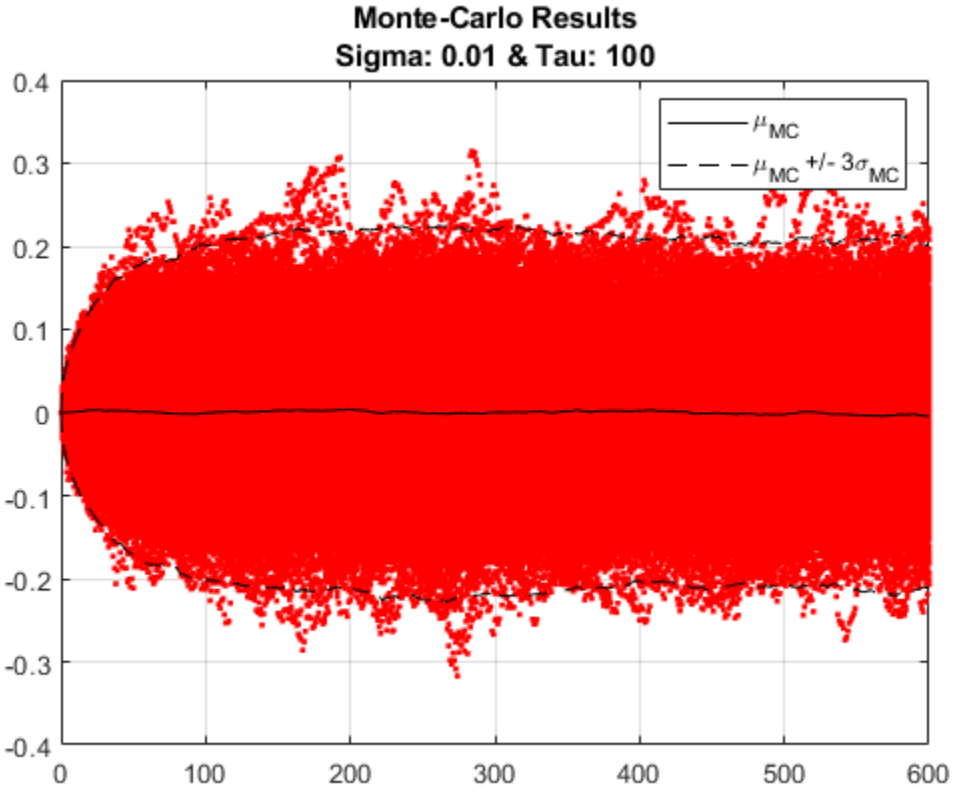

Monte-Carlo & Markov Comparison
Sigma: 0.1 & Tau: 1
0.12
0.1
0.08
0.06
0.04
0.02
0
0
100
200
300
400
500
600
σ_{MC}
σ_x

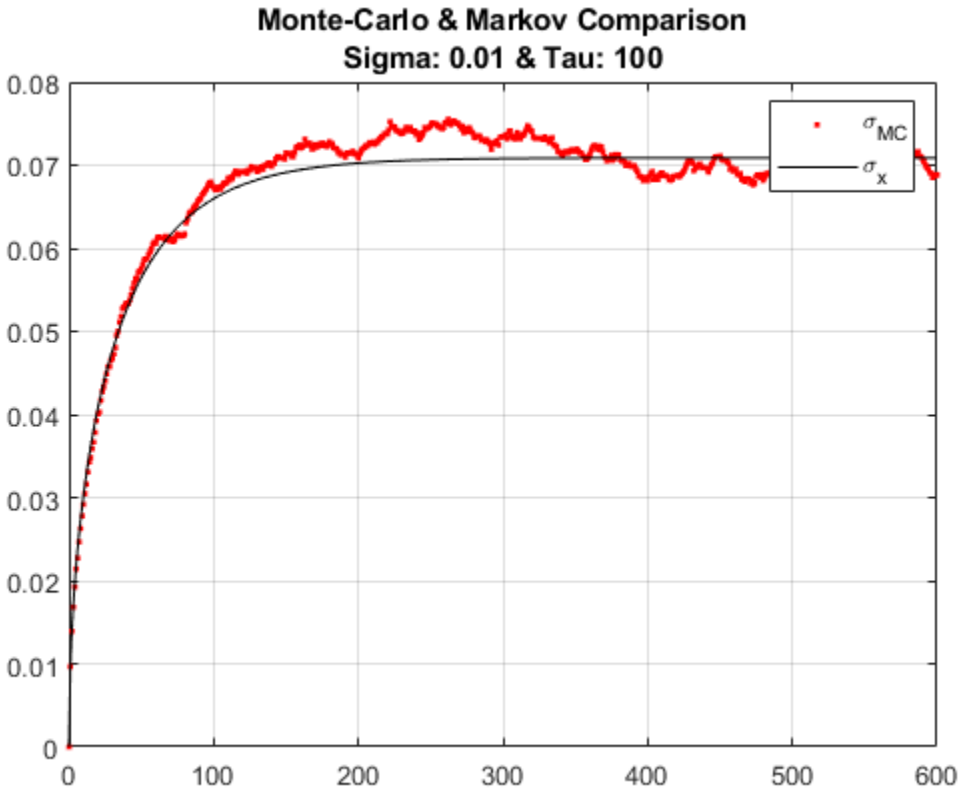

Monte-Carlo Results
Sigma: 0.01 & Tau: 1
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02
-0.03
-0.04
-0.05
0
100
200
300
400
500
600
μ_{MC}
μ_{MC} +/- $3\sigma_{MC}$


Monte-Carlo & Markov Comparison
Sigma: 0.01 & Tau: 1
0.012
0.01
0.008
0.006
0.004
0.002
0
0
100
200
300
400
500
600
σ_{MC}
σ_x


Monte-Carlo Results
Sigma: 0.1 & Tau: 100
3
2
1
0
-1
-2
-3
-4
0
100
200
300
400
500
600
μ_{MC}
μ_{MC} +/- $3\sigma_{MC}$


Monte-Carlo & Markov Comparison
Sigma: 0.1 & Tau: 100
σ_{MC}
σ_x
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
100
200
300
400
500
600


Monte-Carlo Results
Sigma: 0.01 & Tau: 100
μ_{MC}
μ_{MC} +/- $3\sigma_{MC}$
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
-0.4
0
100
200
300
400
500
600



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