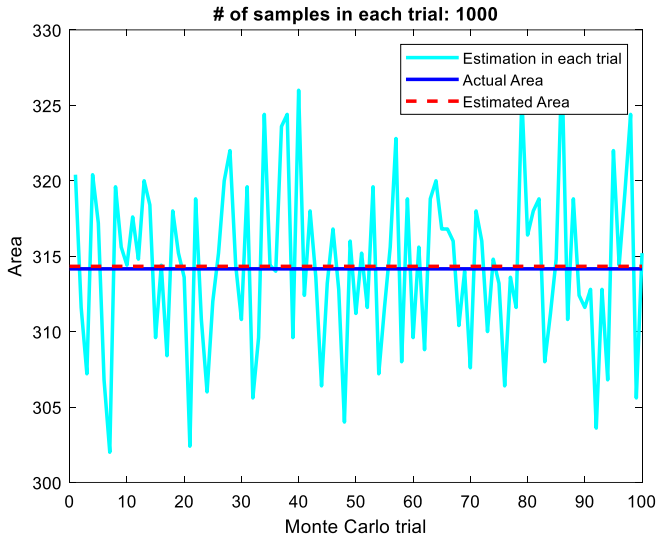
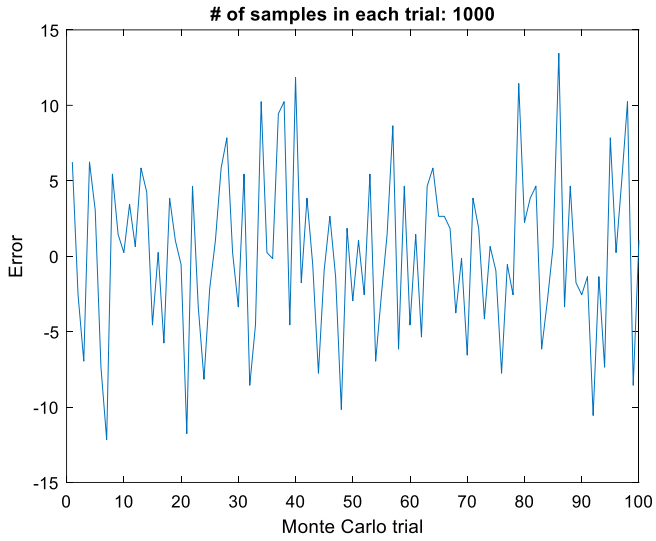
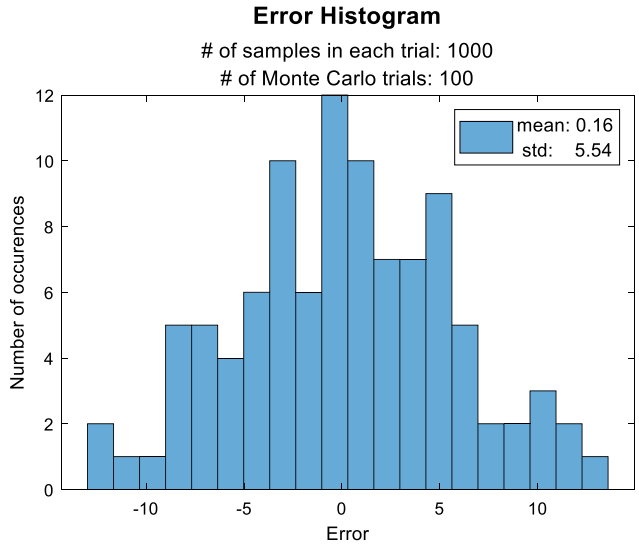
Monte Carlo Integral
Area of a Disk

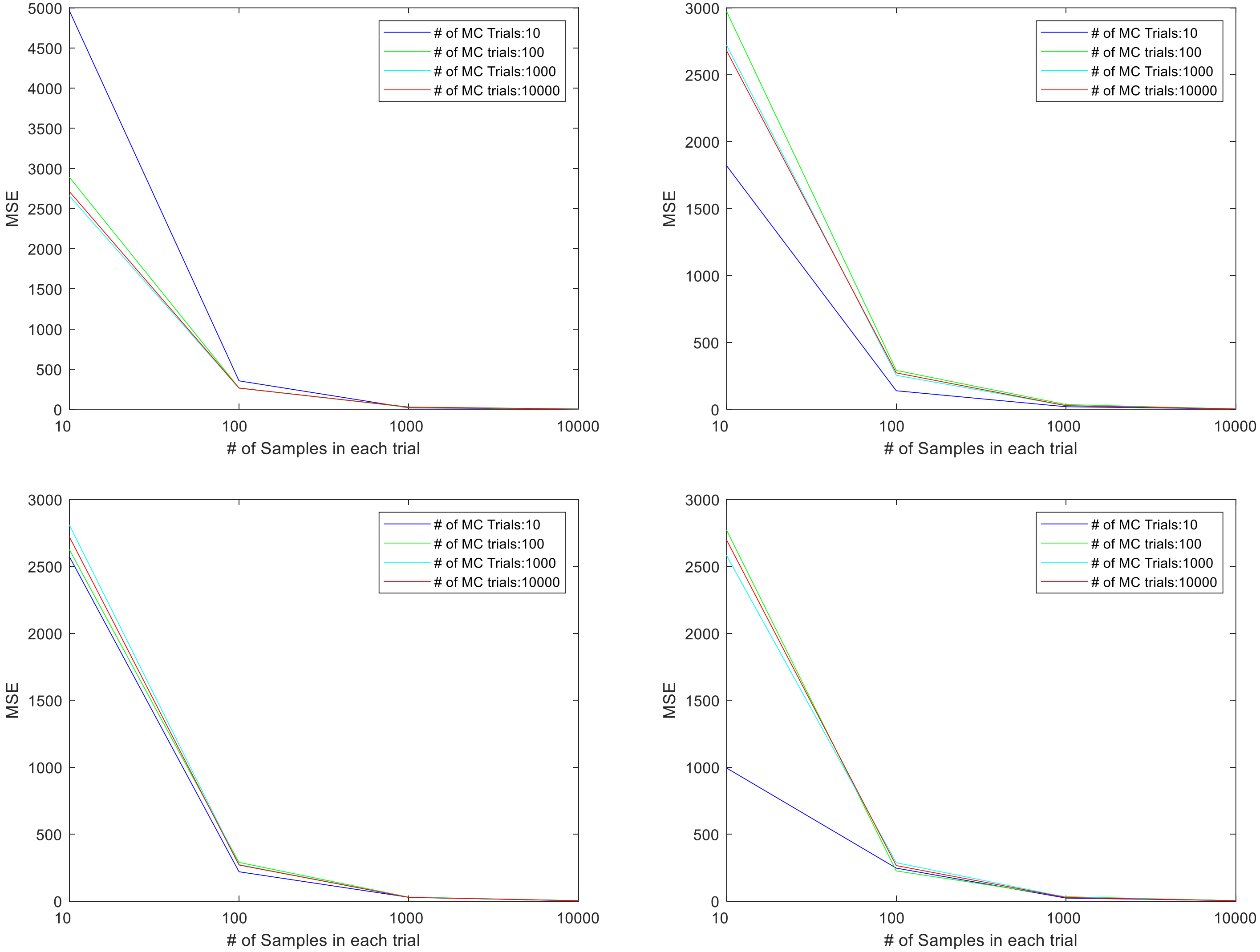






Textbooks: Fikri Öztürk, Levent Özbek, “Matematiksel Modelleme ve Simülasyon”, 2004.
Averill M. Law, “Simulation Modeling and Analysis”, McGraw-Hill, 2015.

Monte Carlo Integral
Area of a Disk



Textbooks: Fikri Öztürk, Levent Özbek, “Matematiksel Modelleme ve Simülasyon”, 2004.
Averill M. Law, “Simulation Modeling and Analysis”, McGraw-Hill, 2015.

Monte Carlo Integral

Area of a Disk

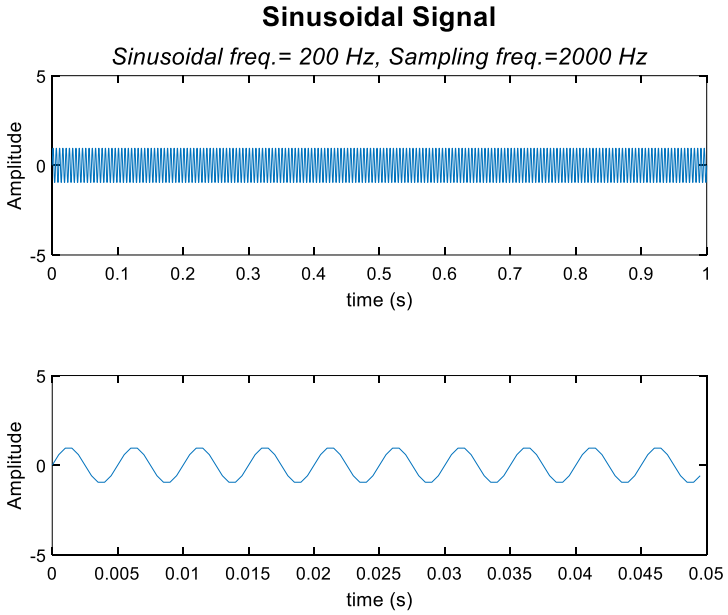
- Accuracy increases with increasing samples
- Trade-off between accuracy and computational complexity
- Note that blue curves are inconsistent whereas red curves are consistent.
  - Therefore, number of trials should be determined correctly considering the trade-off.

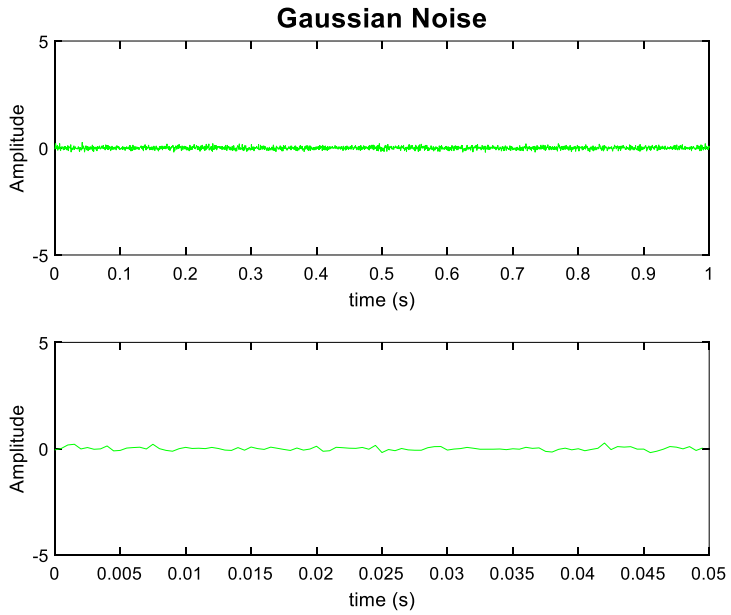
Textbooks: Fikri Öztürk, Levent Özbek, “Matematiksel Modelleme ve Simülasyon”, 2004.
Averill M. Law, “Simulation Modeling and Analysis”, McGraw-Hill, 2015.

Monte Carlo Simulation

Sinusoidal Frequency Estimation

The method is evaluated through Monte Carlo Simulations



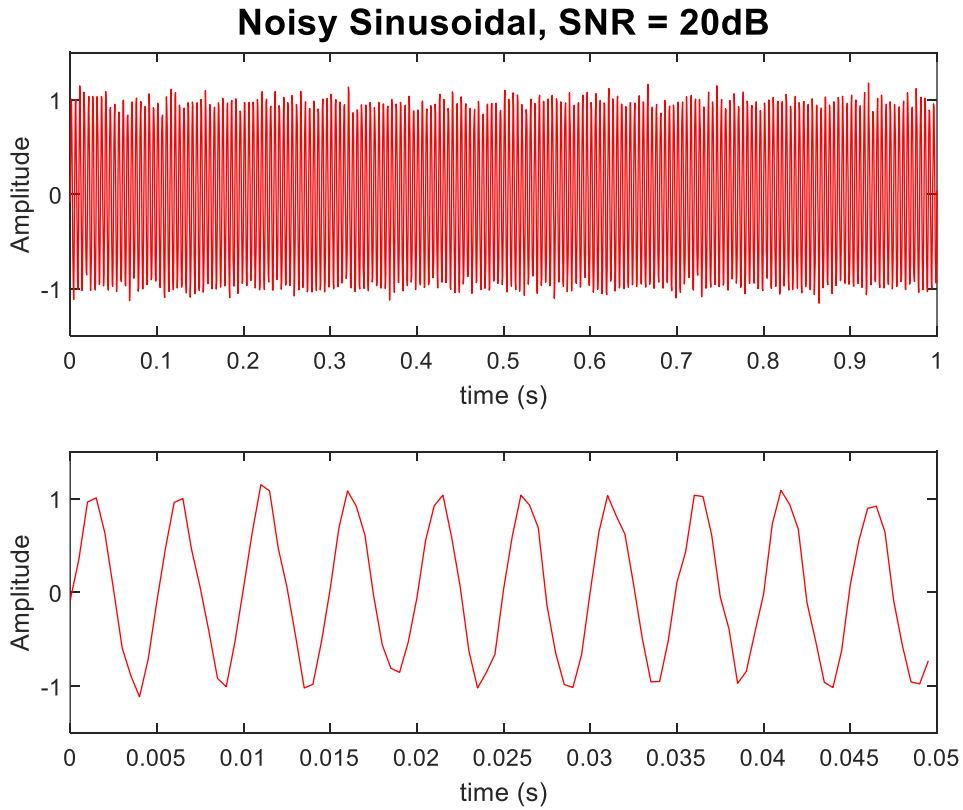


SNR = 20dB

Let us play these signals as sound using MATLAB *sound* function.

Textbooks: Fikri Öztürk, Levent Özbek, “Matematiksel Modelleme ve Simülasyon”, 2004.
Averill M. Law, “Simulation Modeling and Analysis”, McGraw-Hill, 2015.

Monte Carlo Simulation
Sinusoidal Frequency Estimation



SNR = 20dB

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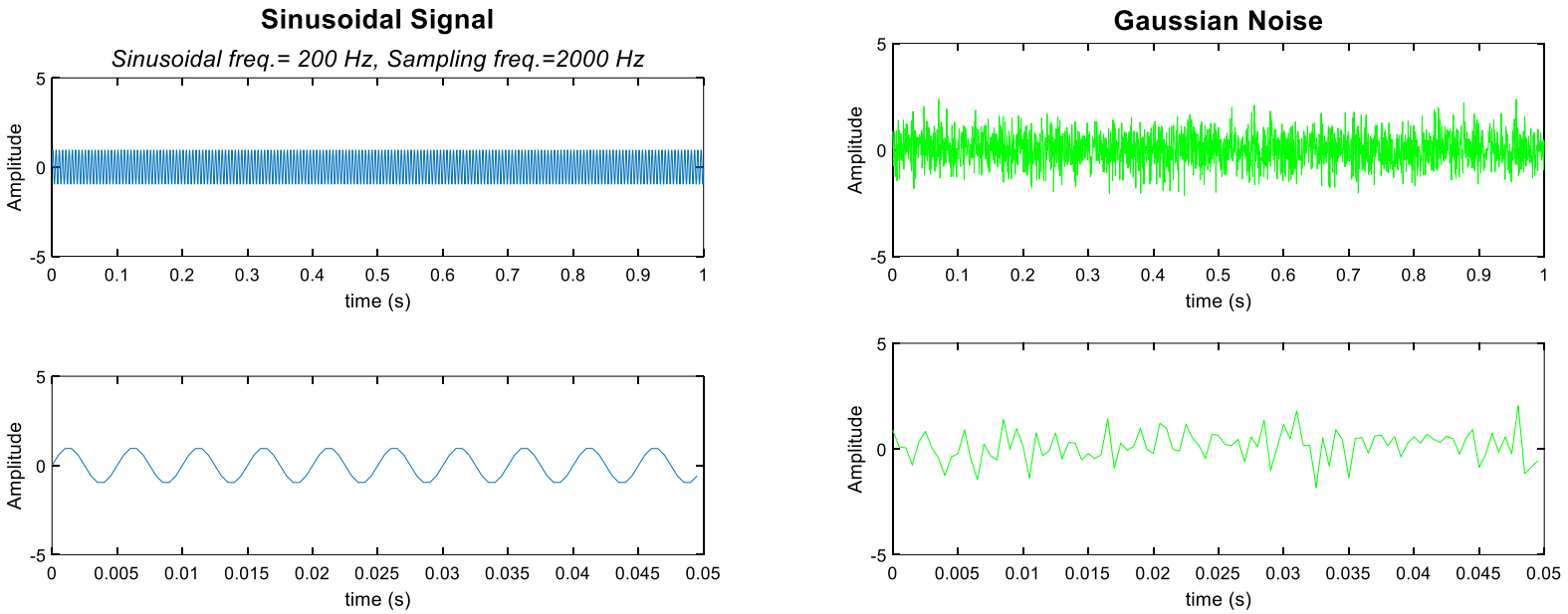
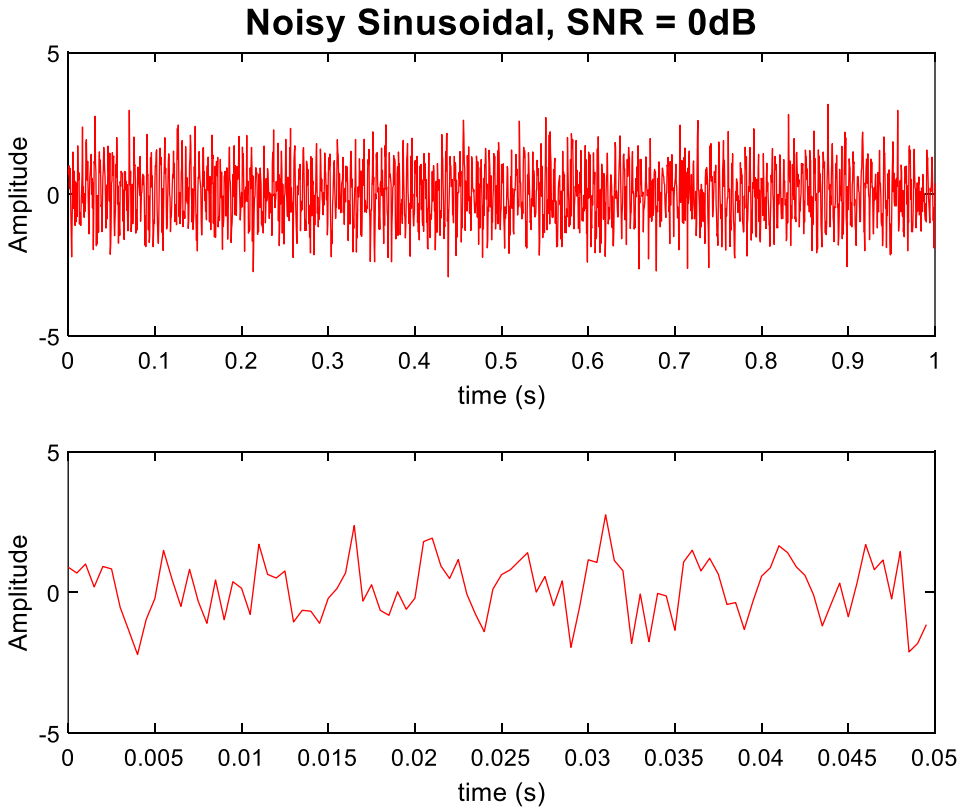
Monte Carlo Simulation
Sinusoidal Frequency Estimation



SNR = 0dB

Textbooks: Fikri Öztürk, Levent Özbek, “Matematiksel Modelleme ve Simülasyon”, 2004.
Averill M. Law, “Simulation Modeling and Analysis”, McGraw-Hill, 2015.

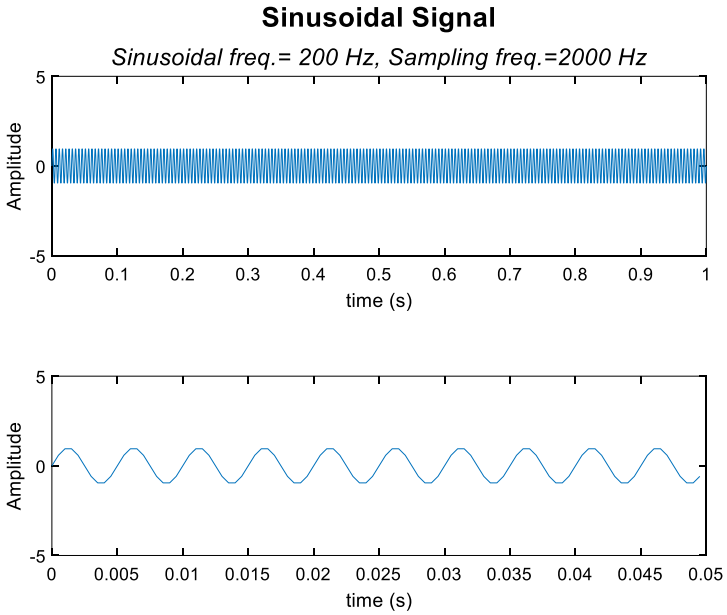
Monte Carlo Simulation
Sinusoidal Frequency Estimation

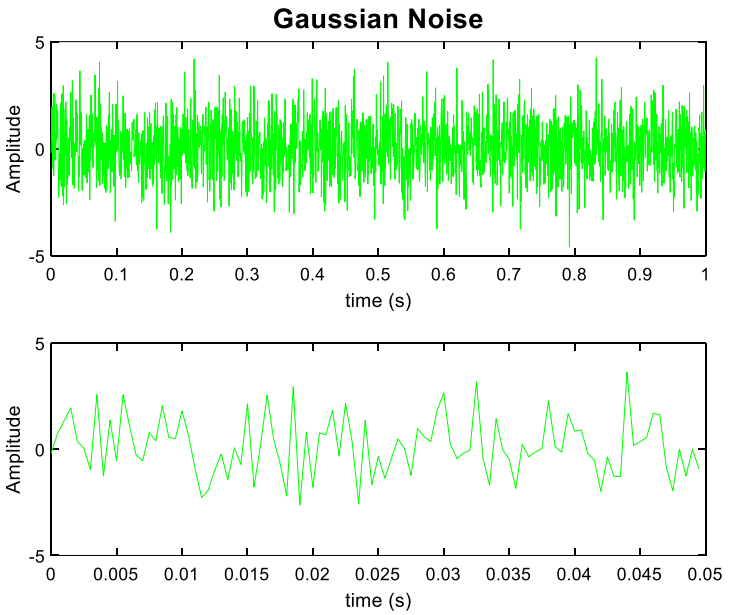


SNR = 0dB

Textbooks: Fikri Öztürk, Levent Özbek, “Matematiksel Modelleme ve Simülasyon”, 2004.
Averill M. Law, “Simulation Modeling and Analysis”, McGraw-Hill, 2015.

Monte Carlo Simulation
Sinusoidal Frequency Estimation

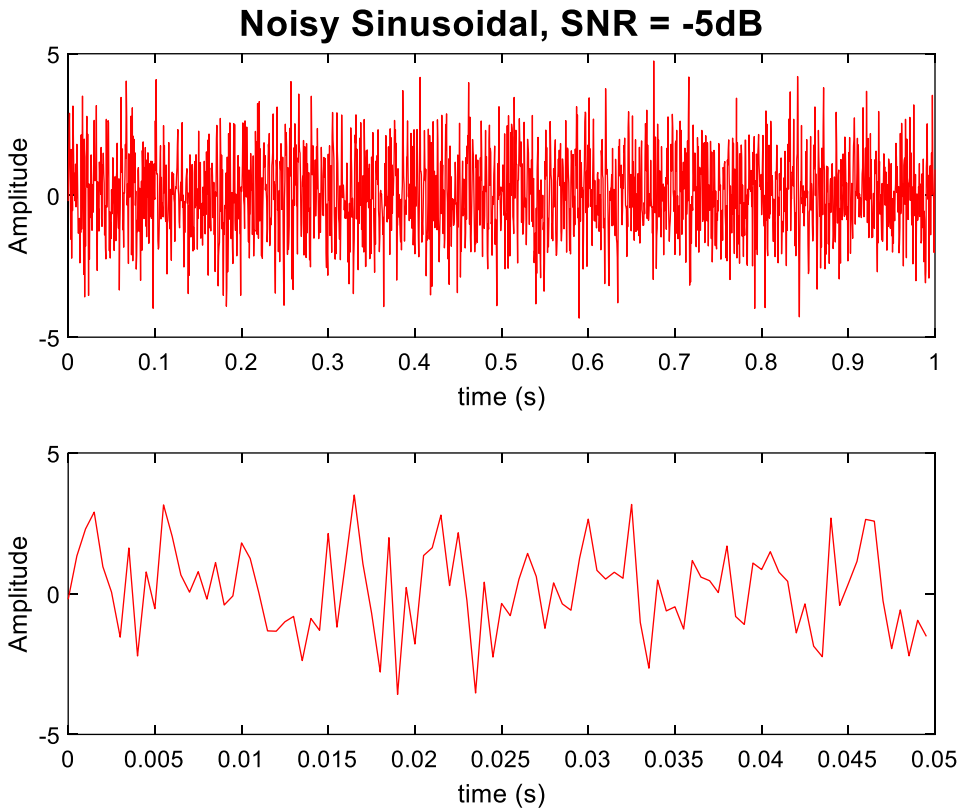




SNR = -5dB

Textbooks: Fikri Öztürk, Levent Özbek, “Matematiksel Modelleme ve Simülasyon”, 2004.
Averill M. Law, “Simulation Modeling and Analysis”, McGraw-Hill, 2015.

Monte Carlo Simulation
Sinusoidal Frequency Estimation



SNR = -5dB

Can you still hear the tone? (barely?)

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