
TÉCNICAS DE AQUISIÇÃO E PROCESSAMENTO DE SINAIS

Profs. Adilton Carneiro e Theo Pavan

Fourier Transform

Parte A: In this experiment the signals simulated for the convolution and cross-correlation experiment will be used.

- 1- Evaluate the Fourier Transform of the sonar simulated signals shifted in time. In this analysis you should compare responses obtained with Power Spectrum, Fourier Transform in rectangular coordinates (real and imaginary parts), and in polar notation.
- 2- Using the Power Spectrum show that the signal to noise ratio (SNR) were in fact the ones you expected. For this purpose, use the mean power of the signal and the mean power of the noise. Use SNR = 10 dB and SNR = 20 dB.
- 3- Suggest and evaluate a method to estimate the signals temporal shift using the Fourier Transform.

Part B: Develop a Labview program to evaluate the reconstruction of square function using Fourier series. Use different quantity of harmonics (between 5 and 500) in this analysis, and evaluate the Gibbs phenomenon for the different cases.