Lab report paraphrasing

Engineering

Engineering and construction Lab report Experiment Taking the following continuous-time signal x(t) represented by ; Determine theFourier transform of the signal for T= 0. 5, 1, 1. 5 and 2 seconds.

T= 0. 5 seconds

T= 1 second

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T= 2 Seconds

T= 1. 5 seconds

T= 2 Seconds

Experiment 2

Given the continuous –time signal x(t) illustrated by

The results that follow were produced.

Par Part 1Part 2

8. 0140

-0. 0005 + 0. 0077i

-0. 0024 + 0. 0032i

-0. 0027 + 0. 0013i

-0. 0028 - 0. 0000i

-0. 0027 - 0. 0013i

-0. 0024 - 0. 0032i

-0. 0005 - 0. 0077i

It is clear from the tables above that Part 1 results as well as part 2 results are identical; something that is anticipated since the first part makes use of the equation introduced in the Discrete Fourier Transform introduction with the second part making use of the Fast Fourier Transform MATLAB. The above two techniques are anticipated to provide a similar solution.

Part 3

The third section of the Experiment 2 was to determine the time used by MATLAB to finish solving the FFT and DFT CODE. The above table demonstrates that the MATLAB function (FFT) on average is quicker in solving the Fourier Transform in comparison to the Discrete Fourier Transform (DFT) equation.

Discussion

According to Experiment 1 observations, the T value of the signal when increased to 2 seconds from 0. 5 seconds in 0. 5 increments, the Fourier Transform accuracy also rises. Consequently, it is also evident that when the value of T is 0. 5 seconds, the graph appears exceptionally different from the other 3 graphs since the period is not a big number to show the 2 tasks. These roles are actually the ones indicated on with line with the other one being made from the size of the troughs and peaks. This can clearly be seen when T= 2 seconds in the graph in experiment 1.

A correct value could not be displayed by the power spectrum because T value was too tiny. As illustrated, whenever the value of T rises, the power spectrum begins to exhibit the 2 co-sinusoids. When the experiment is over, it becomes clear that the magnitude of code required to solve the FFT is much shorter and simpler than the substitute DFT code. The other point to put into consideration would be the results obtained in section 3 of experiment 2. Thus, these results showed the time consumed to determine the DFT as well as the FFT, something that demonstrates that the FFT is quicker and realistic for determining the Fourier Transform.

Consequently, FFT can be utilised in different methods through the entire

electrical engineering comprising of researching on audio waves as well as the technique involving the audio signals, especially in recognition of pattern in instances where an engineer is searching for definite similarities or points, in addition to medical imagery like MRI scans etc. The above are just a few of numerous uses that electrical engineers are provided for by FFT at present.