Assignment 7 Probability

Narsupalli Sai Vamsi

June 2022

Abstract

This pdf consists the solution to the question 12.4from in Papoulis pillai

Outline

Question 12.4

Q 12.4

Show that the process $x(t) = a.e^{j(\omega t+\phi)}$ is not correlation-ergodic.

Solution

Solution

Given that $x(t) = a.e^{j(\omega t+\phi)}$ then the time average is given by

$$\frac{1}{2T}\int_{-T}^{T} x(t+\tau)x^*(t) = e^{j\omega\tau}a^2$$

As it goes to infinte but not zero it is not correlation-ergodic