

**Monte Carlo**

Analysis Exploration with A Band-Pass Filter

01 – Simulation

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Table of Contents

[Introduction 2](#_Toc220775509)

[The Problem 2](#_Toc220775510)

[What is Monte Carlo? 2](#_Toc220775511)

# Introduction

For the first day of the journey, while learning more LT-Spice, I stumbled upon the Monte Carlo Simulation. The name seems fancy, but in reality, it turned out to be a really important tool in the electrical engineer’s toolbox.

# The Problem

In an undergrad’s early engineering days, the professors’ main concern was teaching the students the main concepts and physics behind what we’ll be dealing with. While dealing with simulations first, the concept of tolerance wasn’t our main study scope. In real life, nothing is ideal. Engineers work daily with nonidealities and must have a space for tolerance, so the design doesn’t fail. Here comes Monte Carlo’s purpose.

# What is Monte Carlo?

Monte Carlo is a type of computational algorithm that uses randomness and a sufficient number of iterations to cover the effect of the tolerance on the design created. Using Monte Carlo while simulating exposes you to your circuit’s limitation, with respect to tolerance. It allows you to make sure that your circuit will be able to achieve its purpose, almost correctly.

# My Application

To see and learn about this simulation, I decided to use a type of a Band-Pass filter circuit.