Chapter 1

Seigel-Bargmann Space

In this chapter, we will collect ideas and other perspective we have understanding the concentration of measure phenomenon. Especially with symmetric product of $\mathbb{C}P^1$ and see how it relates to Riemman surfaces and Seigel-Bargmann spaces.

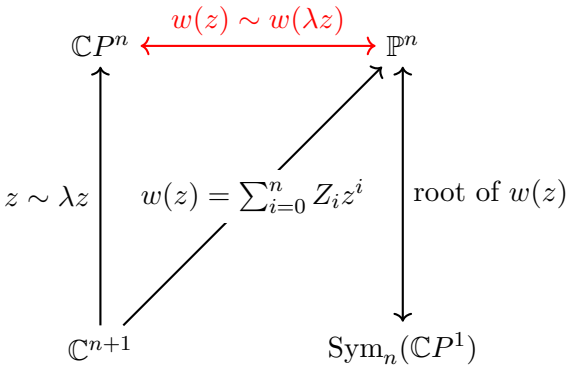

Figure 1.1: Majorana stellar representation

Basically, there is a bijection between the complex projective space $\mathbb{C}P^n$ and the set of roots of a polynomial of degree n.

We can use a symmetric group of permutations of n complex numbers (or S^2) to represent the $\mathbb{C}P^n$, that is, $\mathbb{C}P^n = S^2 \times S^2 \times \cdots \times S^2/S_n$.

One might be interested in the random sampling over the $\mathrm{Sym}_n(\mathbb{C}P^1)$ and the concentration of measure phenomenon on that.

1.1 Majorana stellar representation of the quantum state

Definition 1. *Let n be a positive integer. The Majorana stellar representation of the quantum state is the set of all roots of a polynomial of degree n in $\mathbb{C}$.*

1.2 Space of complex valued functions and pure states