

## **Abstract**

In this report, we will discuss the mobility edges and Anderson transitions in the disordered models. We first present some results in the one dimension model with various quasiperiodic potentials, showing of localized phases, extended phases and critical phases in different energy regimes. We mainly focus on the physics in two coupled chains. Next, we will try to extend the results to higher dimensional models without many-body interaction and the one dimensional models with many-body interaction in the presence of random potentials. We will try to understand the results in the language of random matrix theory. All these results show that when the localized states and extended states are coupled, it is quite possible to yield new physics by engineering of their interactions.