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# Phys 359

## STATISTICAL MECHANICS

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# 1 Introduction

## 1.1 What is Statistical Mechanics

Statistical Mechanics is the area of Physics interested in systems with a large number of degrees of freedom  $n$ . Note that these variables can be interacting or not.

There are two distinct classes of Statistical Mechanics: equilibrium and non-equilibrium.

The Statistical part of Statistical Mechanics implies that it is inherently a study of probabilities and probability distributions. These laws must still remain fully consistent with physical laws.

Typically, systems are analyzed on a microscopic level. For a system of particles  $\{q_i\}$  and their positions  $\{\vec{r}_i\}$ .