

# CHAPTER I



## INTRODUCTION

A string of masses connected to each other by springs is called a linear chain. At both undergraduate and graduate levels, we study the motion (modes of vibration) of the linear chain in the courses on classical mechanics, and the vibration of monatomic lattices and the vibration of diatomic lattices in the courses on solid state physics.

For this thesis, in the Chapter II, a short introduction to infinite and semi-infinite chains in two cases, the monatomic and the diatomic chains have been reviewed. The problem of infinite monatomic and diatomic chains solved by Bloch function have also been reviewed briefly in the Chapter III. In the chapter IV, E.N. Martinez's problem [1] of the semi-infinite monatomic chain solved by the response function has been reviewed briefly and in the Chapter V the problem of the semi-infinite diatomic chain

reviewed briefly and in the Chapter V the problem of the semi-infinite diatomic chain solved by the response function has been presented. In the Chapter VI, a discussion has been presented on the motions and the energy transport of a semi-infinite diatomic chain when a sinusoidally varying force is applied, and there are some comparisons between the response function method and Bloch function method. Therefore, we have studied how both methods are similar or contrasting. We are able to know what the response functions give to us in the conclusion.

The aim of this thesis is to gain some experience and familiarity with how to solve the problem in linear chains by the response function method. It may be the basis for further study.



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