55828 Experimental Set-Up has been designed specifically to study Lattice dynamics through electrical analogue experiments for postgraduate course in Physics, Engineering Physics, Electronic Engineering and Material Science. In particular it is essential for understanding the interaction of electromagnetic waves and crystalline solids. In general, students find it difficult to understand involved concepts like accoustical mode, optical mode, energy gap etc., which they cannot see for themselves in the laboratory. Such a difficulty can be overcome by introducing a laboratory exercise in which the student follows a carefully prescribed procedure which presents him with a simplified model of the system and allows him to verify well established theories. In the process the gains an insight into the concepts. The lattice dynamics provides such an experience in the study of mono and di-atomics lattices.

The set up is complete in all respect and requires no other apparatus.

Practical experience on this set up carries great educative value for Science and Engineering Students.

OBJECT

01 To study of the disperision relation for the monoatomic lattice. Comparison with theory. Determination of the cut-off frequency of the mono-atomic lattice.

02 Study of the disperision relation for the diatomic lattice, acoustical mode, 'optical mode' and 'energy gap'. Comparison with theory.

FEATURES

01 The complete experimental Set-up consists of :
Audio oscillator with amplitude control and facility to vary the frequency dual range from 0 to 10 KHz & 0 to 100KHz. It has built in power supply and output stage to match the impedance of simulated lattice. Another part Lattice Dynamics consists of transmission line which simulates one dimensional mono and diatomic lattices..

02 Strongly supported by detailed Operating Instructions, giving details of Object, Theory, Design procedures, Report Suggestions and Book References.

03 Dimension : W 340 x H125 x D 210.

OTHER APPARATUS REQUIRED:

01 Dual trace CRO

Note: Specifications are subject to change.