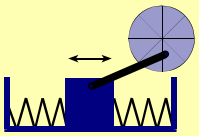
TAP 307- 10: Resonance

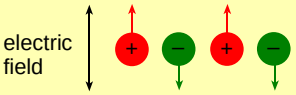
Resonance occurs when driving frequency is equal to natural frequency. The amplitude at resonance, and just away from resonance, is affected by the damping.

Resonant response

Oscillator driven by oscillating driver

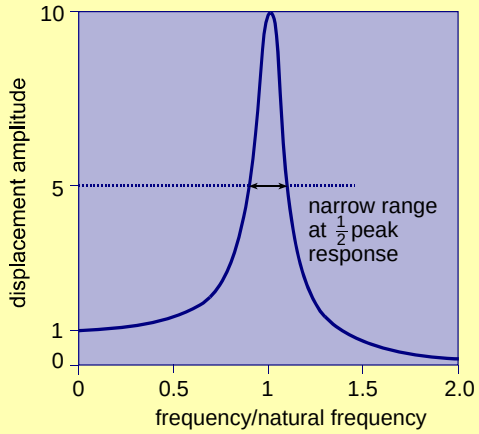


Example: ions in oscillating electric field

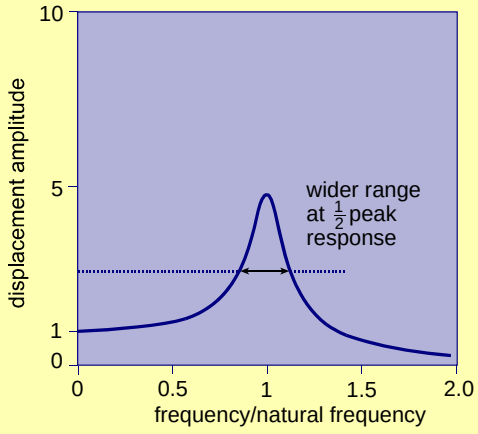


ions in a crystal resonate and absorb energy

low damping:
large maximum response
sharp resonance peak



more damping:
smaller maximum response
broader resonance peak



Resonant response is a maximum when frequency of driver is equal to natural frequency of oscillator

Practical advice

This diagram is reproduced here so that you can talk through it, or adapt it to your own purposes.

External reference

This activity is taken from Advancing Physics chapter 10, 140O