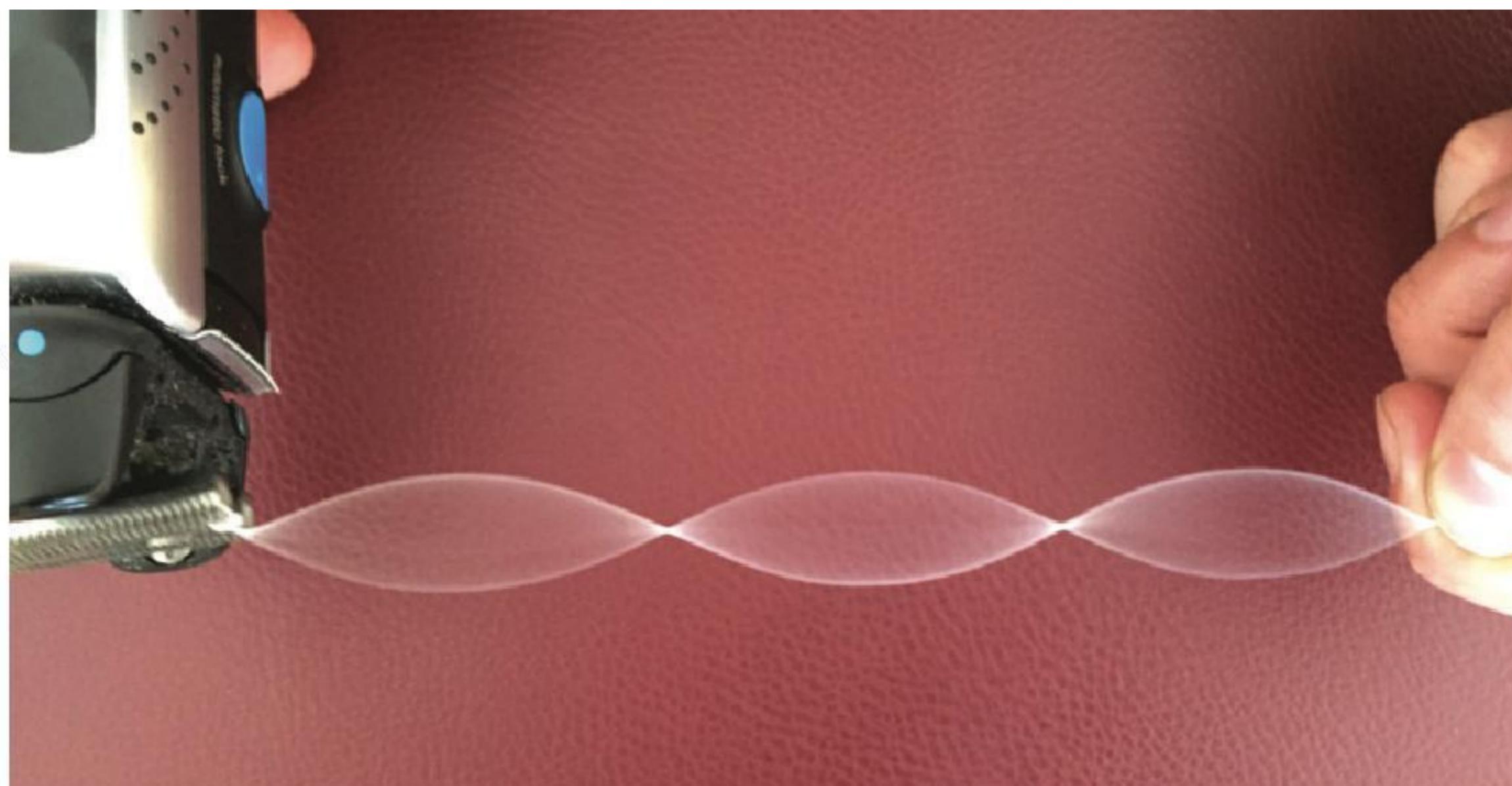




جامعة الجبيل الصناعية
JUBAIL INDUSTRIAL COLLEGE

PHYSICS 121

الموَجَاتِ
Waves-I



Temiz et al. Physics Education, 53(3).
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Semester

453

JEARL WALKER | DAVID HALLIDAY | ROBERT RESNICK

Principles of Physics

Tenth Edition



Contents:

- 16.1 Transverse Waves: Types of waves, Transverse and Longitudinal Waves, Wavelength and Frequency, The Speed of a Traveling Waves
- 16.2 Wave Speed on a Stretched String
- 16.3 Energy and Power of a Wave Travelling Along a String
- 16.5 Interference of Waves: The Principle of Superposition of Waves
- 16.7 Standing waves and Resonance: Standing Waves

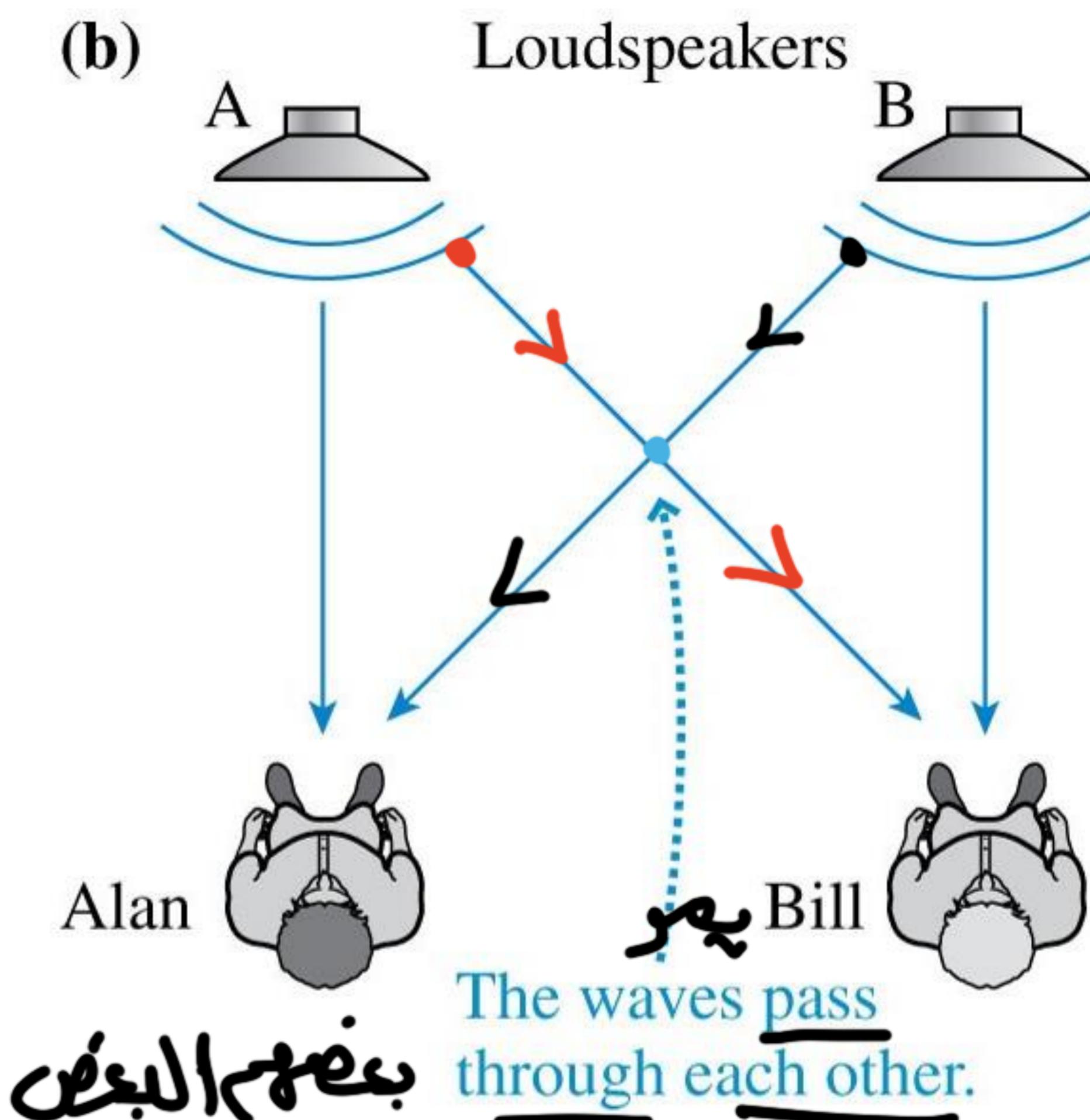
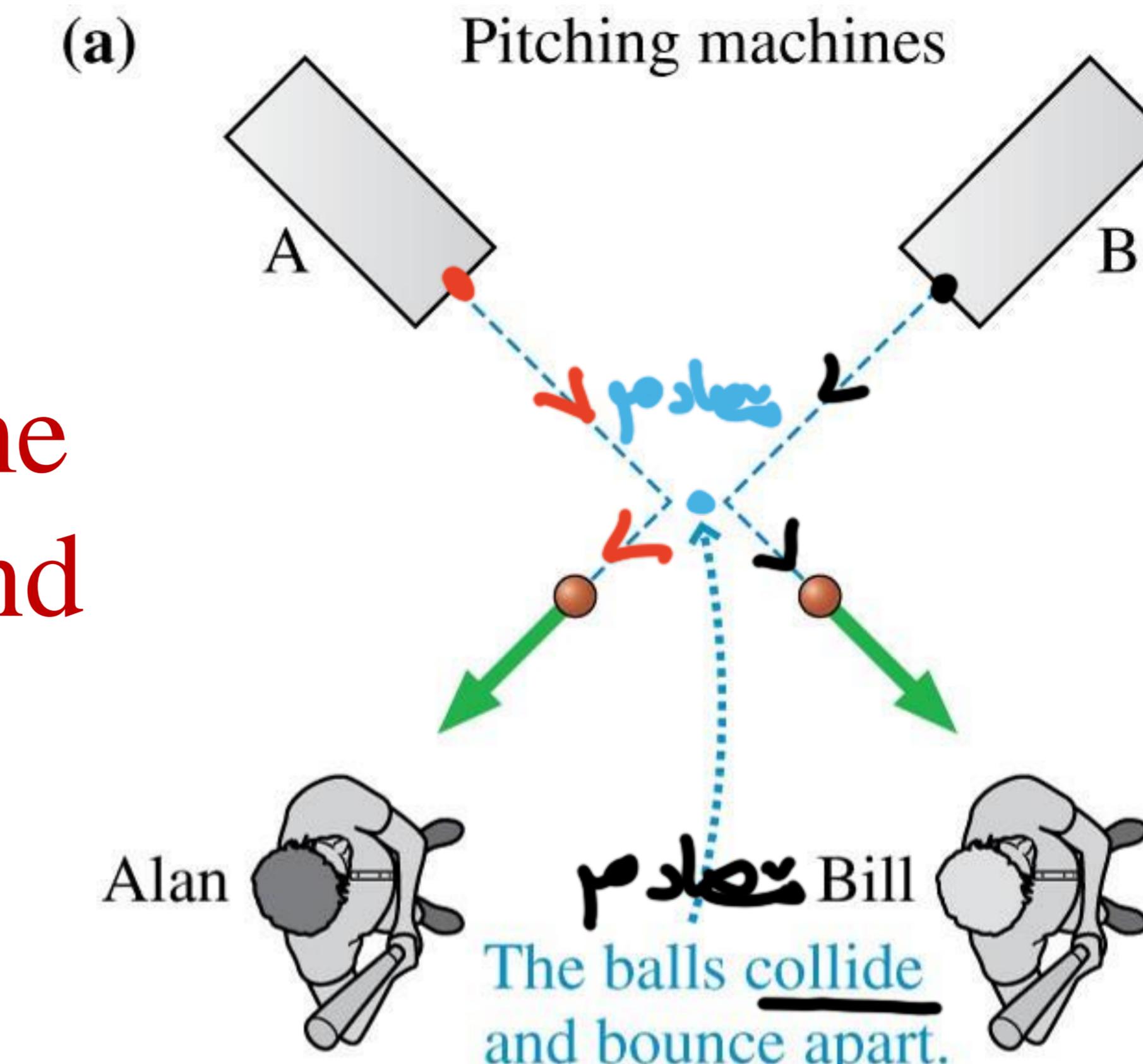
Particles versus Waves

جسيمات

الو. جان

- Two particles flying through the same point at the same time will collide and bounce apart, as in Figure (a).

يصادم عن بعضهما
بعضهما



Types of waves

ما هي أنواع الموجات

ماذا تكون الموجات

تدبر ينتقل
خلال وسيلة

What is a wave?

A wave is a disturbance traveling through a medium.

Types of Waves

ال PHYSICAL

1 Mechanical Waves

* Re却ire a material medium.
* لاحتاج لوسط للاستقلال

* Examples:

- 1 - water waves
- 2 - sound waves
- 3 - waves on a string
- 4 - seismic waves

ال ELECTROMAGNETIC

2 Electromagnetic Waves

* They do not require medium.
* لاحتاج لوسط للاستقلال

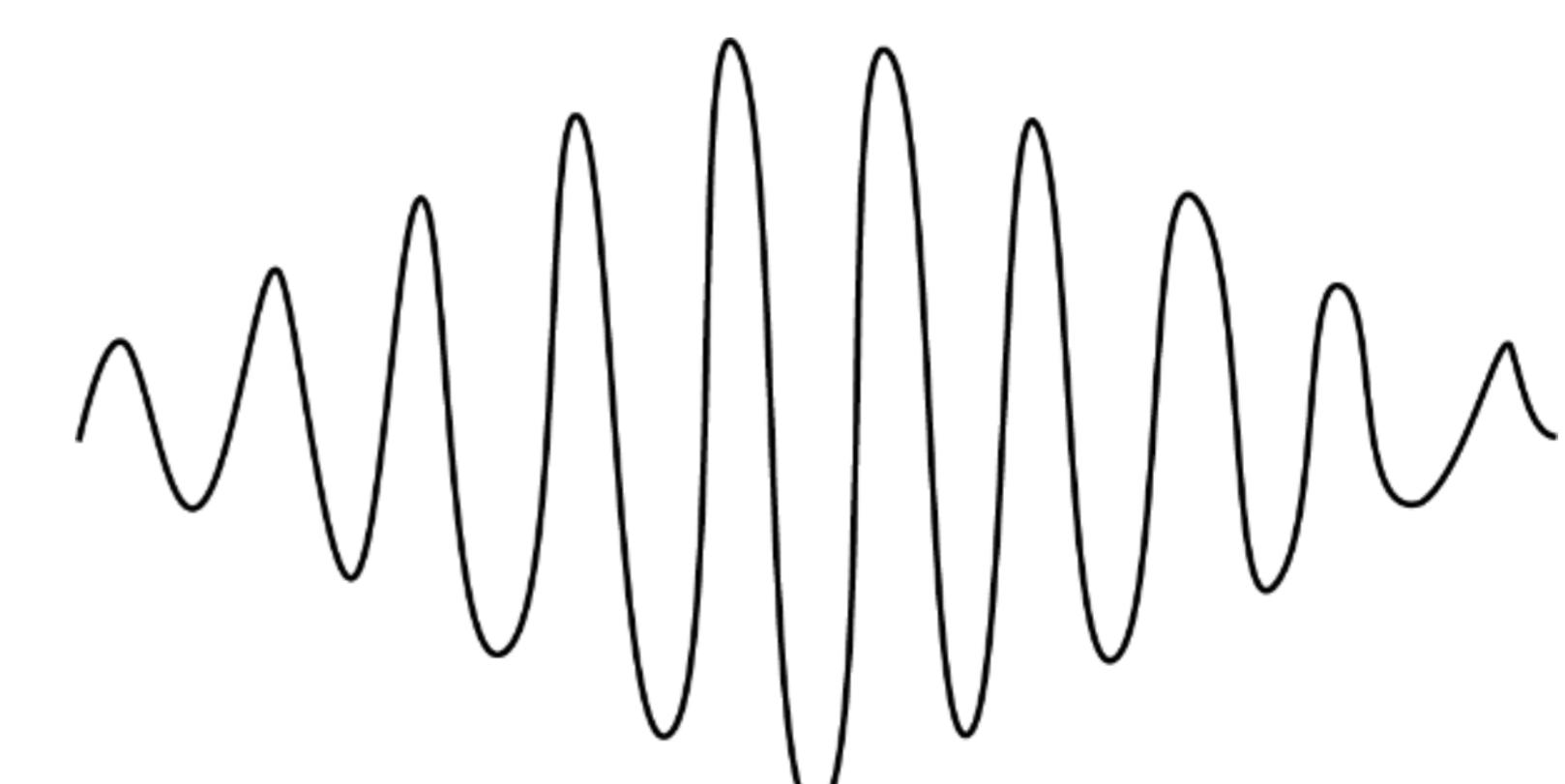
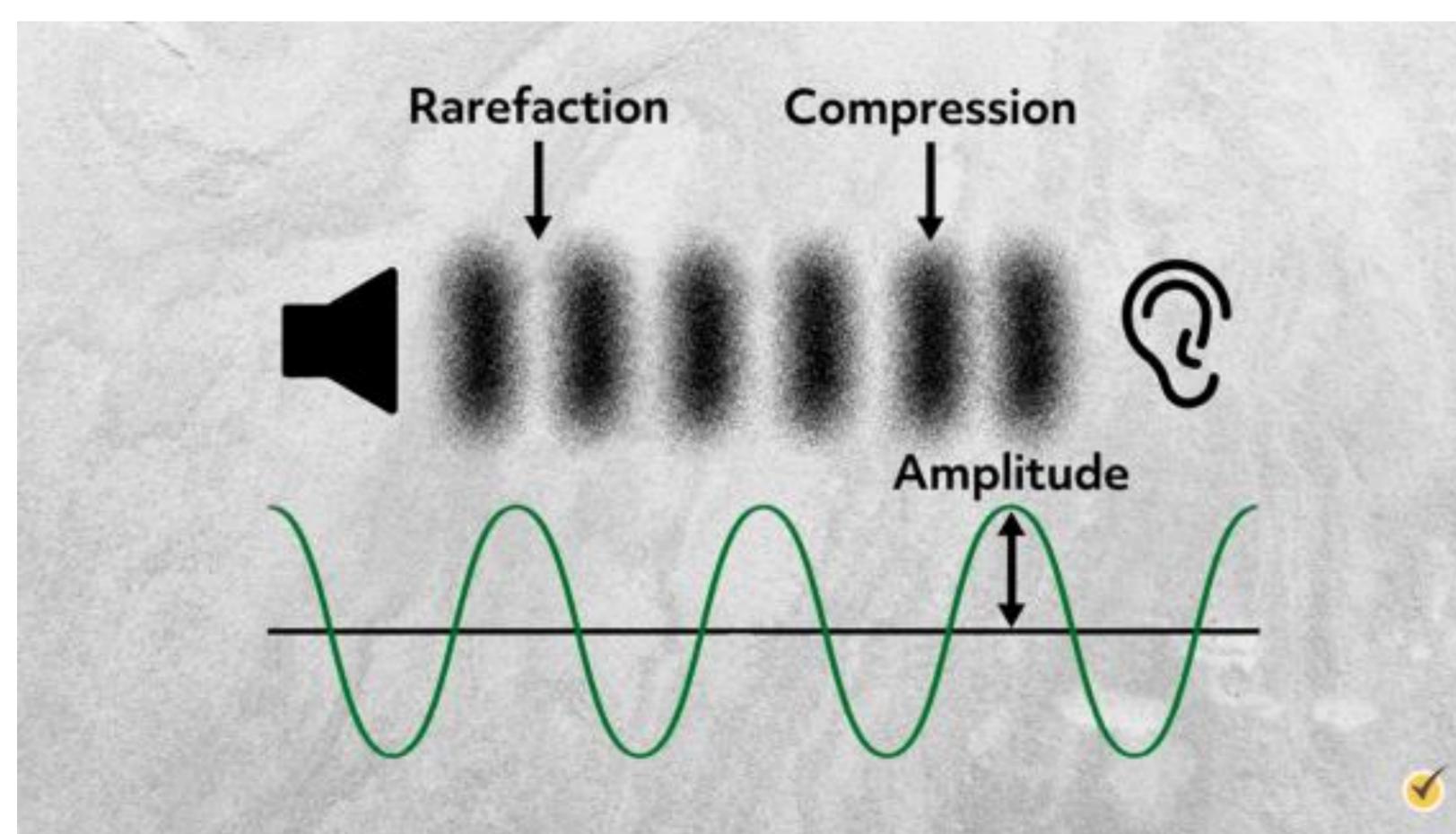
* Examples:

- 1 - visible light
- 2 - radio waves
- 3 - x rays.

ال MATTER

3 Matter Waves

* associated with electrons, protons, and other fundamental particles.
* موجات تتنفس من الإلكترونات والبروتونات والبيوتات والذريات

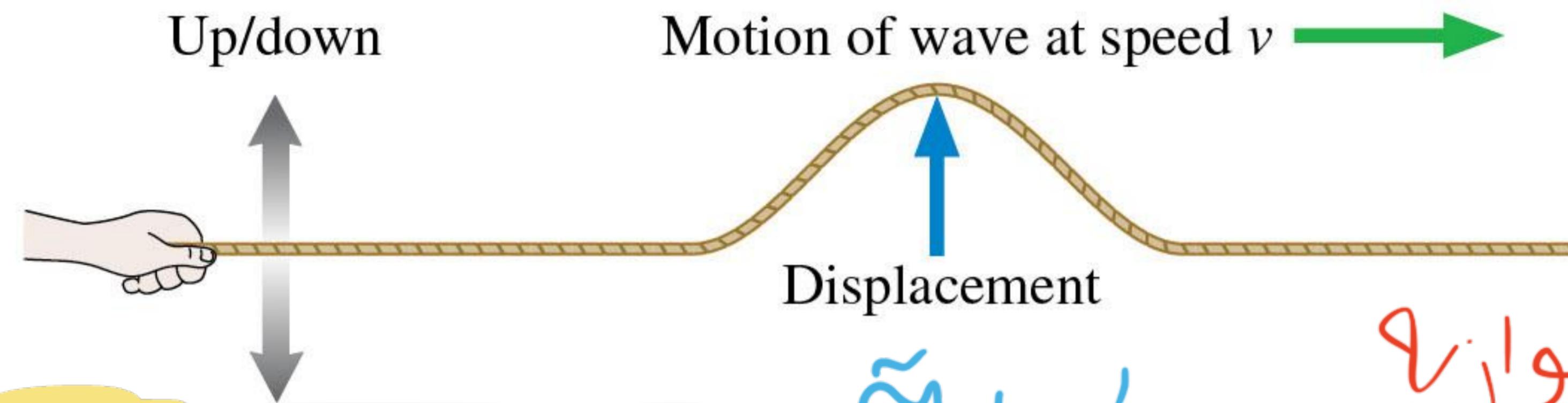


Types of waves

Most waves can also be classified into:

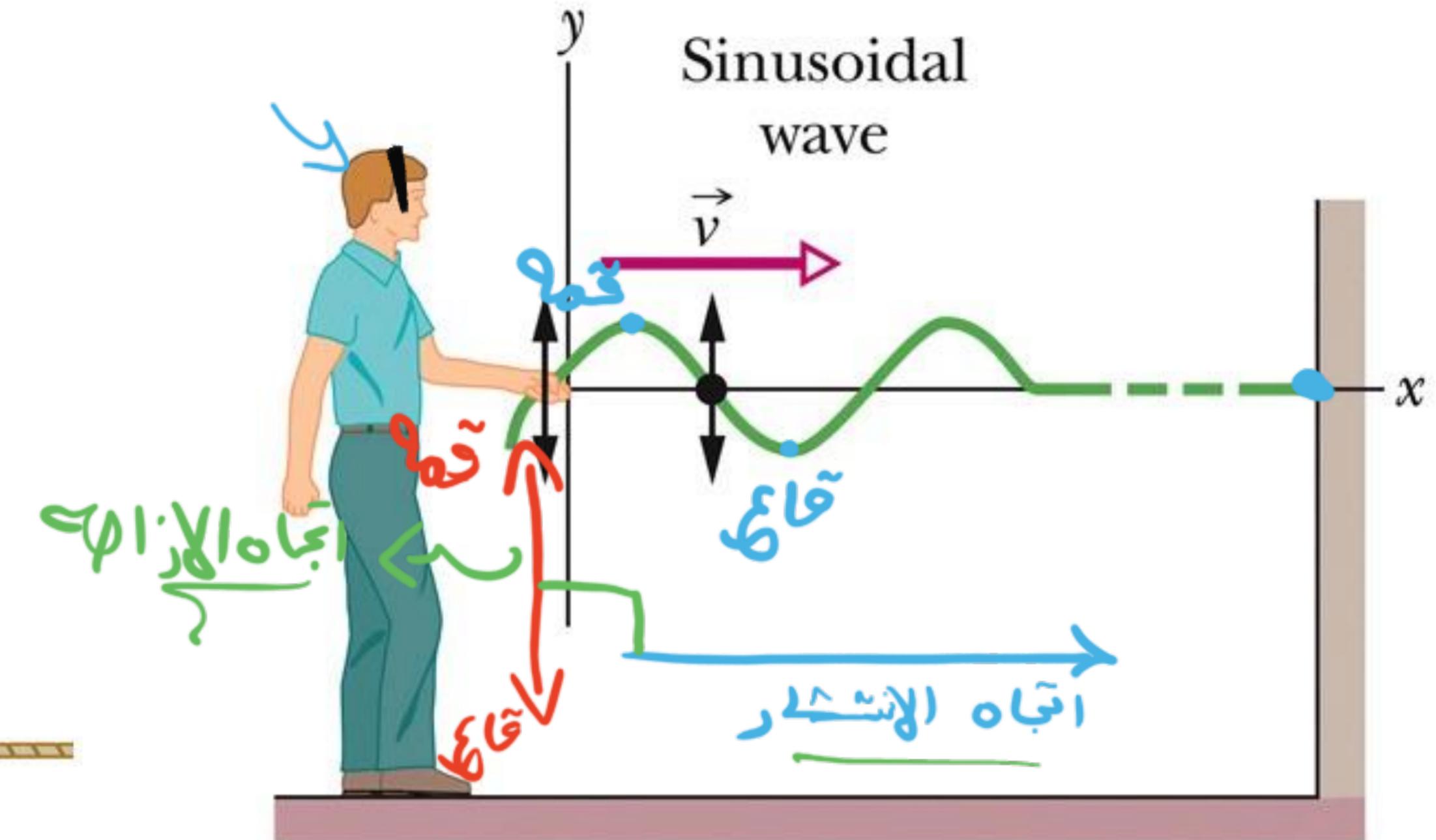
Transverse Waves

- In a **transverse wave**, the displacement is **perpendicular** to the direction of travel.
- Examples : waves on **A string**



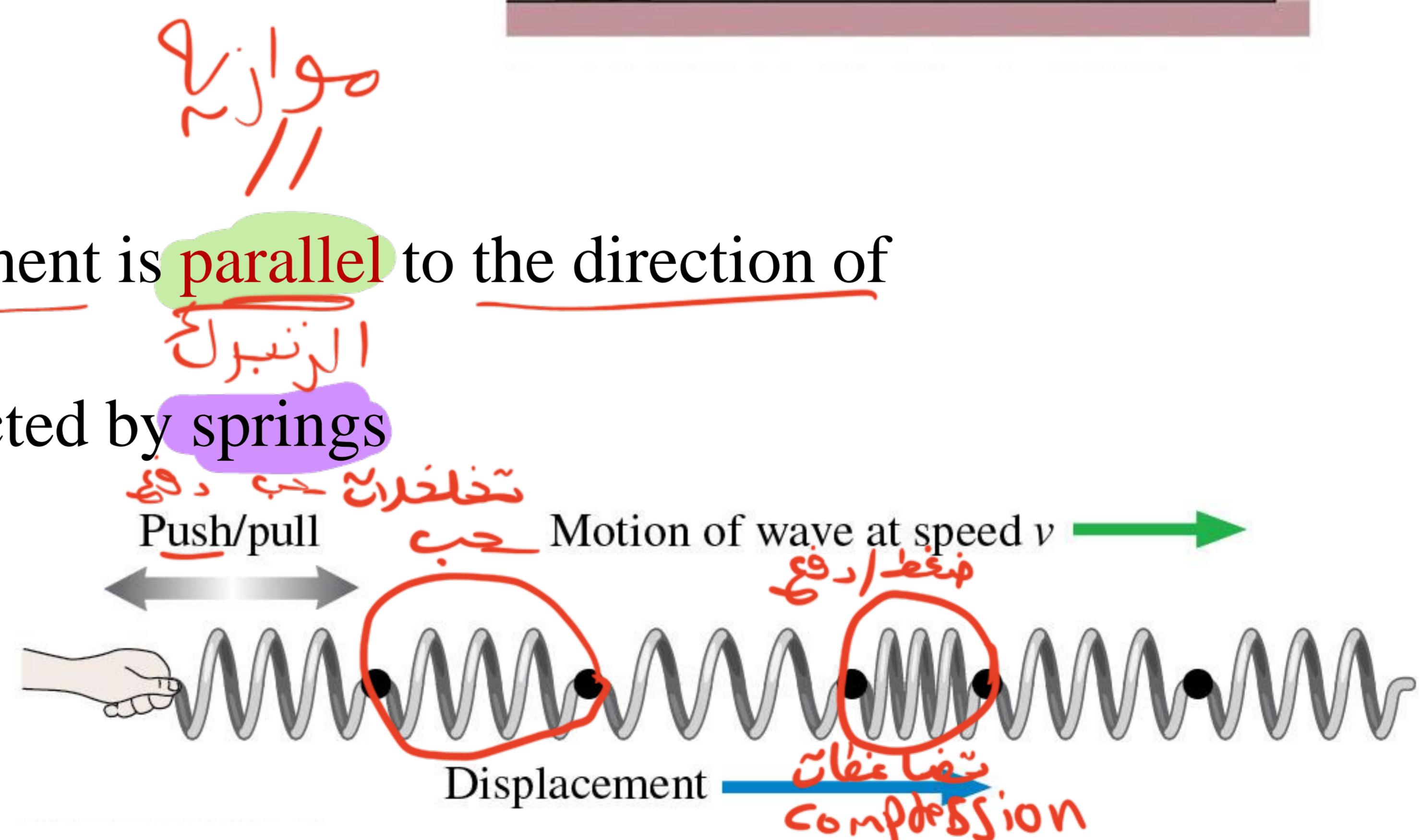
سمسر خضراء
الاواز

الاواز



Longitudinal Waves

- In a **longitudinal wave**, the displacement is **parallel** to the direction of travel.
- Examples : a chain of masses connected by **springs**



موازية