Lecture on

Waves & Oscillations

Classification of Motions

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Classification of Motions

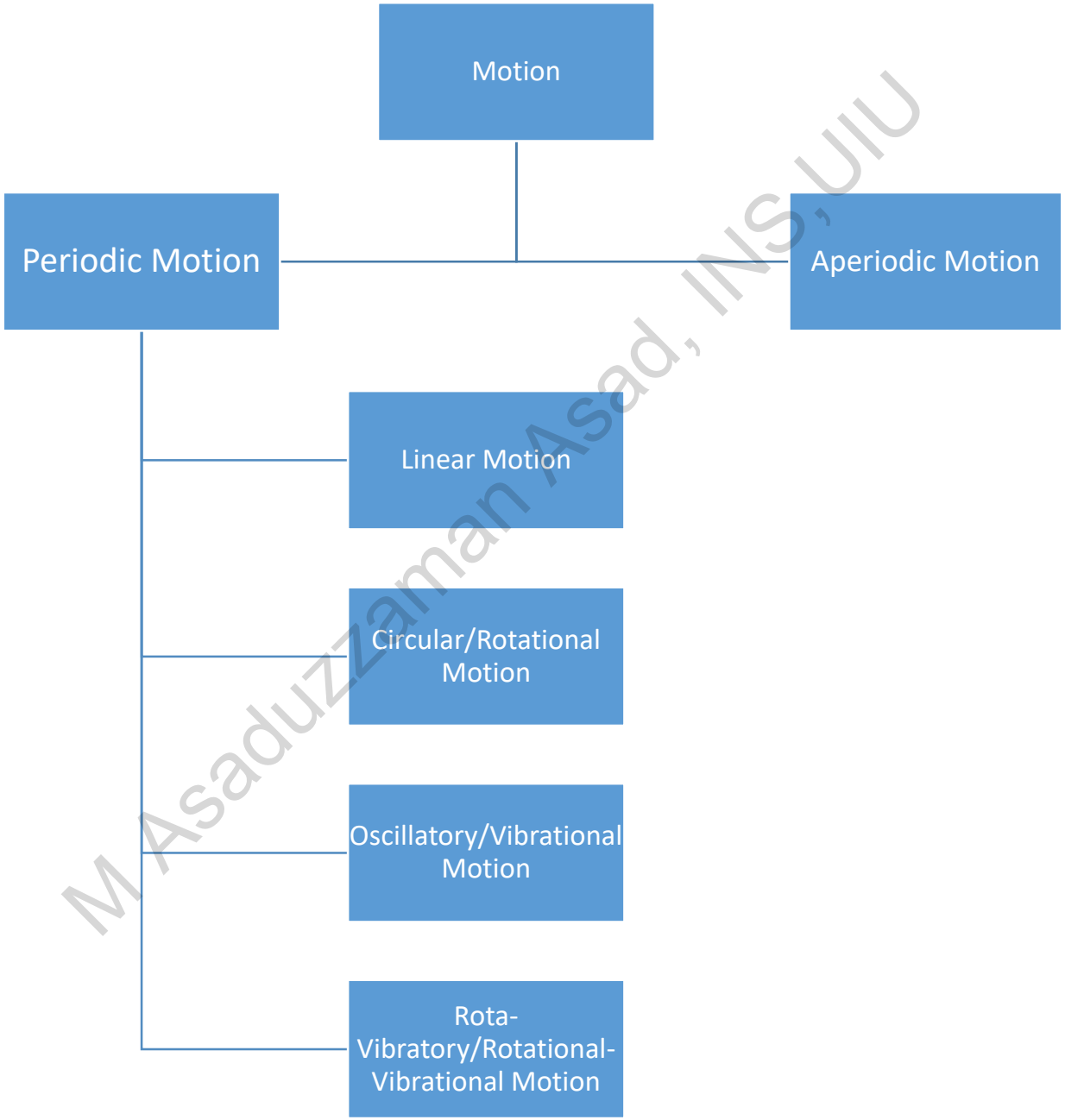
Waves & Oscillations

Where there is Wave there is Oscillation

Where there is Oscillation there is Wave

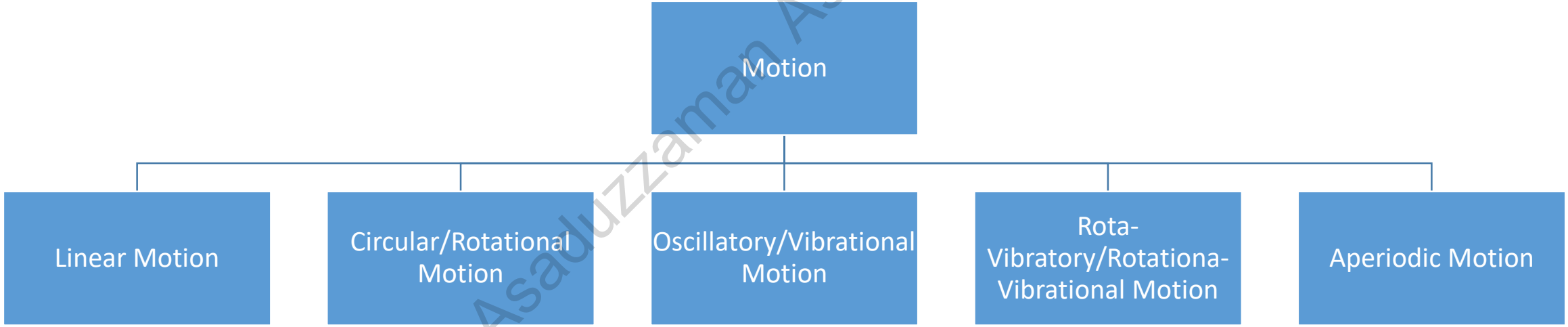
Motion is the common factor of Waves & Oscillations.

Classification of Motions



Classification of Motions

In a gross below are the total types of motion:



Classification of Motions

Periodic Motion:

When a particle moves from one place to another at a set interval of time, then that motion is called Periodic Motion.

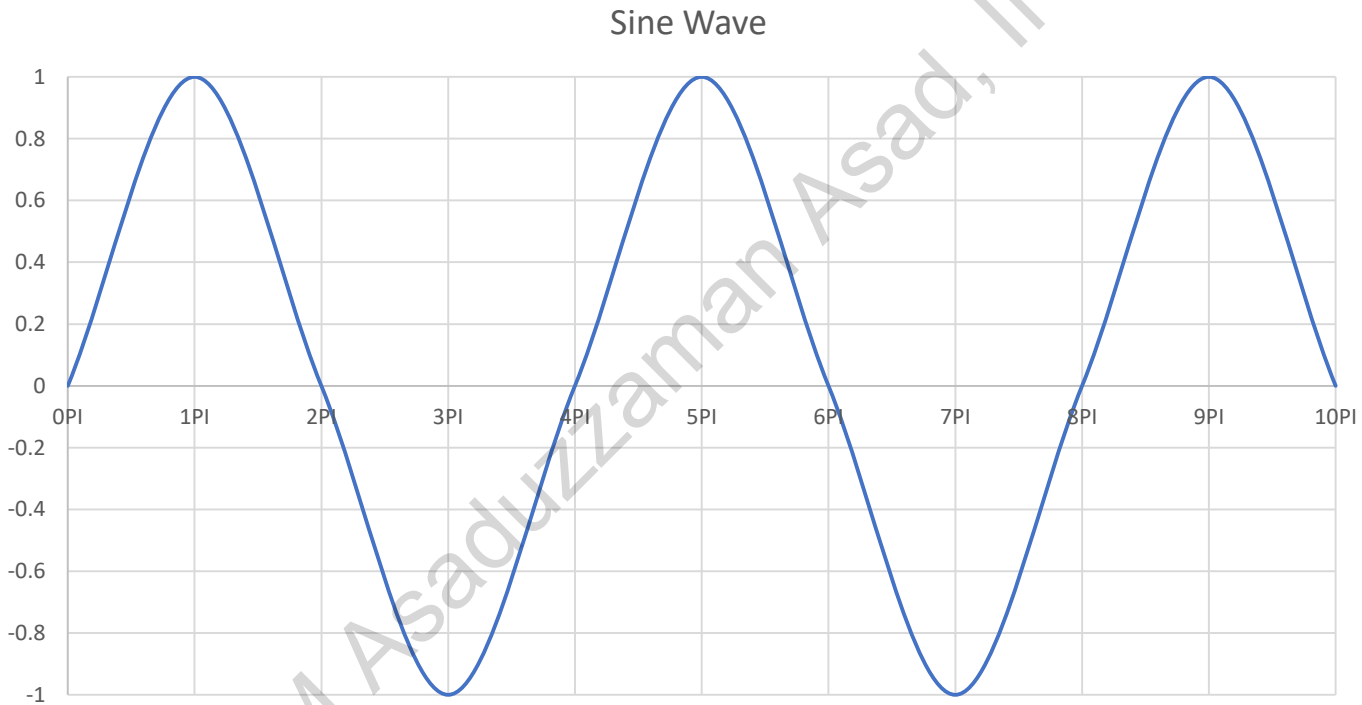


Fig: Periodic Wave

Classification of Motions

Types:

1. ***Linear Motion:*** When a particle is moving in a straight path, the motion is linear motion. Example: A car moving from left to right in a straight path, The average motion of a train, etc.

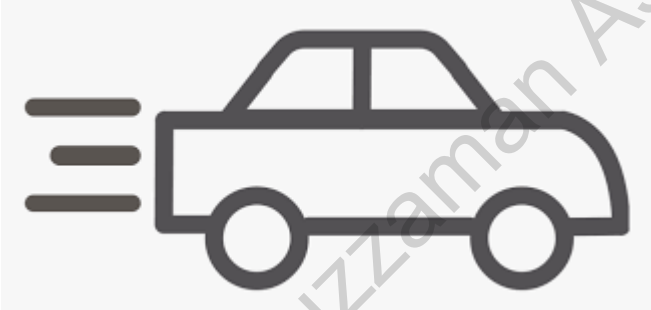


Fig: Car moving on a straight path

Classification of Motions

2. Circular/Rotational Motion: When a particle is moving in a circular path, the motion is said to be Circular/Rotational Motion. Example: Motion of the hands of a clock, Motion of a wheel, etc.

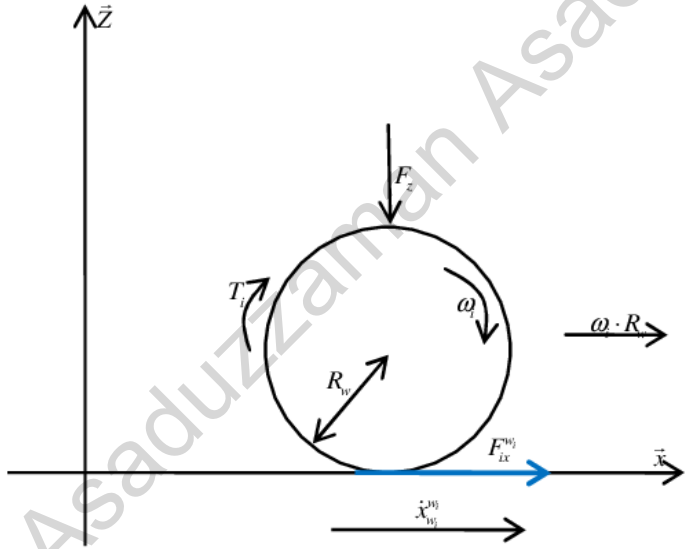


Fig: Motion of a wheel

Classification of Motions

3. *Oscillatory/Vibrational Motion:* When particles are moving **to and fro** or **up and down** towards a mean point, then the motion is said to be Oscillatory/Vibrational Motion. Example: Motion of simple pendulum, Motion of a tuning fork, etc.

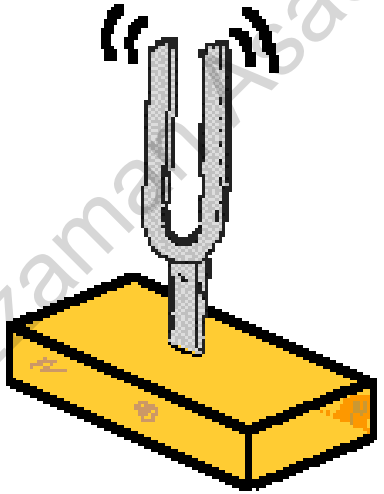


Fig: Tuning fork

Classification of Motions

4. Rota-Vibratory/Rotational-Vibrational Motion: When the particles are moving under the influence of both rotational and circular motion, the overall motion is called Rota-Vibratory/Rotational-Vibrational Motion. Example: Motion of an electric motor, Earth's motion towards the Sun, etc.

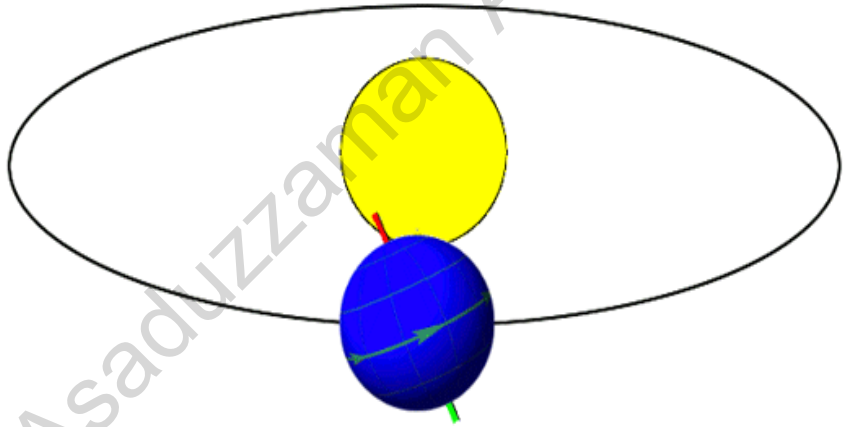


Fig: Earth's rotation towards the sun

Classification of Motions

Aperiodic Motion:

When particles are moving in indefinite interval of time, then it is called Aperiodic Motion.

Example: DHM (Damped Harmonic Motion), Tornedo, etc.

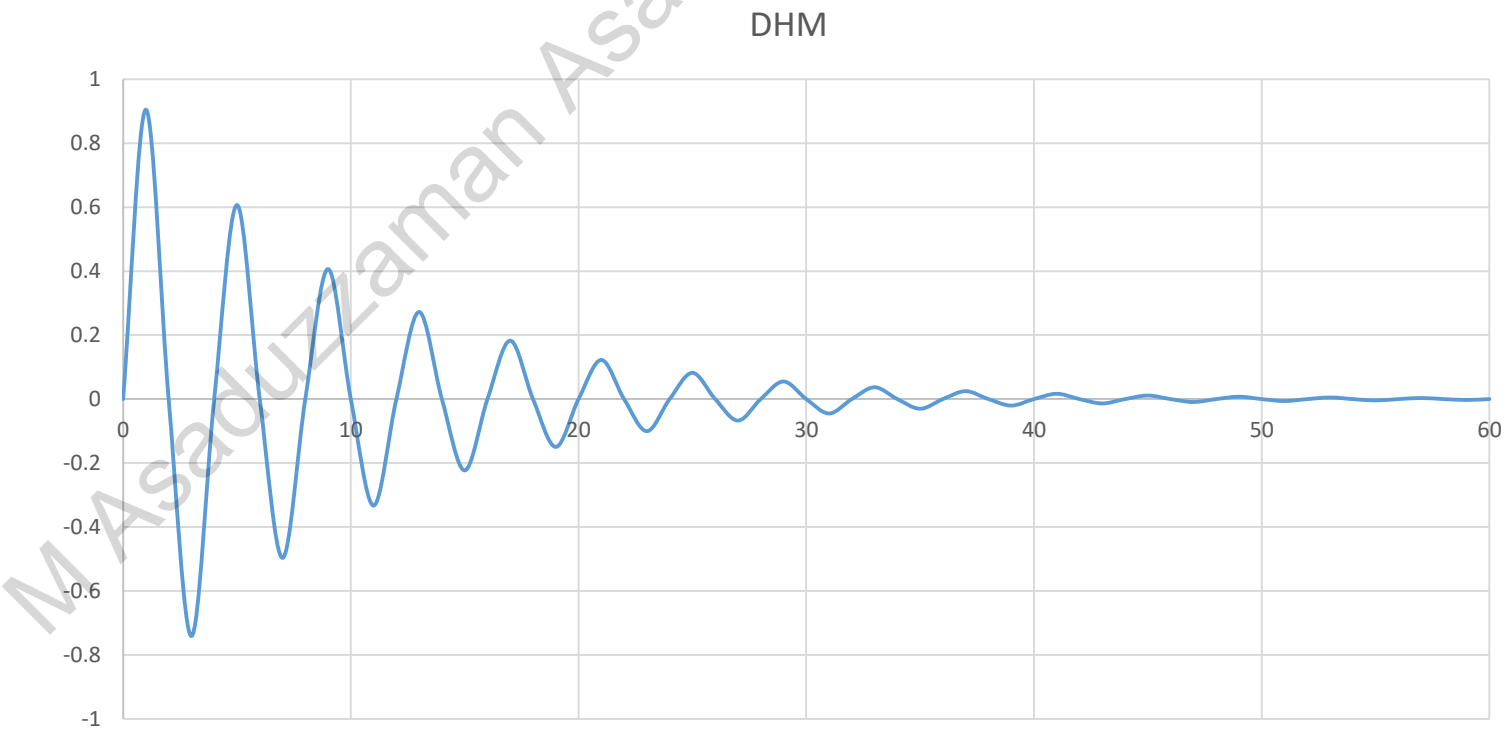


Fig: Aperiodic Wave

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