

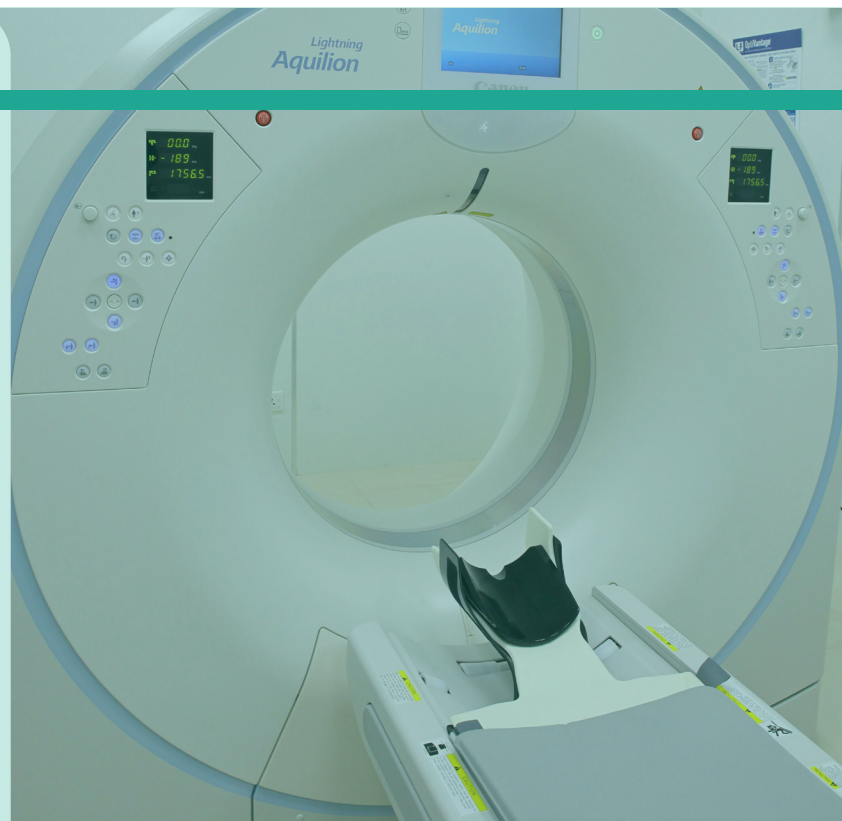
**CONCEPT** EMR stands for Electromagnetic Radiation and refers to the energy that travels through space in the form of waves or particles. Electromagnetic radiation includes visible light, radio waves, microwaves, x-rays and gamma rays.

EMF, or Electromagnetic Fields, refer to the physical fields that are created by moving charges, such as the electric and magnetic fields that are produced by a current-carrying wire.

EMR and EMF are essential to the study of physics and has a wide range of applications in areas such as telecommunications, medical imaging and electrical engineering.

## BACKGROUND

The history of EMR & EMF (Electromagnetic Radiation and Electromagnetic Fields) dates back to the 19th century when scientists first began to investigate the properties of electricity and magnetism. The work of scientists such as James Clerk Maxwell and Michael Faraday laid the foundation for the modern understanding of electromagnetic waves and fields. In the early 20th century, the invention of radio and the development of wireless technology furthered the understanding and application of EMR & EMF. Today, EMR & EMF continue to be an important topic of study in fields such as physics, engineering and medicine.



*Make sure it measures up*

## EXAMPLES

There are several essential components/forms related to EMR & EMF (Electromagnetic Radiation and Electromagnetic Fields), including:

**ELECTROMAGNETIC WAVES:** EMR refers to the waves of energy that are created when electric and magnetic fields interact with each other. These waves can be described by their frequency, wavelength and amplitude.

**ELECTROMAGNETIC FIELDS:** EMF refers to the field that surrounds an electrically charged object, which can be static or dynamic. This field is created by the movement of charged particles, such as electrons in a current.

**ELECTROMAGNETIC SPECTRUM:** This is the range of all electromagnetic waves, including radio waves, microwaves, infrared radiation, visible light, ultraviolet radiation, x-rays and gamma rays. Each type of wave has a different wavelength and frequency and is used for different applications.

**HEALTH EFFECTS:** The potential health effects of exposure to EMR & EMF are an important component of this topic. While the scientific evidence is still inconclusive, some studies suggest a possible link between long-term exposure to EMR & EMF and certain health issues, such as cancer and infertility.

**SAFETY MEASURES:** To minimize any potential harm from EMR & EMF exposure, safety measures can be taken, such as reducing the time spent using electronic devices, using hands-free devices for cell phones and using protective shields on electronic devices.

EMR & EMF can be produced by a variety of sources, including power lines, cell phones, computers and other electronic devices. Natural sources of EMR & EMF include the sun and other stars.

Understanding these essential components/forms related to EMR & EMF is crucial for gaining a deeper understanding of this topic and its applications.

## REAL WORLD CONNECTIONS

X-rays are just one example of electromagnetic radiation (EMR). One of the most common examples is when a person goes to the dentist for their yearly check-up. At least once a year it is recommended to have x-rays taken to assess a patient's overall dental health. These x-rays are considered preventive in nature. Meaning: they allow dentists to catch problematic tooth decay when it is smaller and treatment prognosis is better. Different types of x-rays are taken depending on the clinical presentation of each patient.



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