

Al-Mustaqbal University College  
Department of Medical Physics  
The Fourth Stage  
First Course



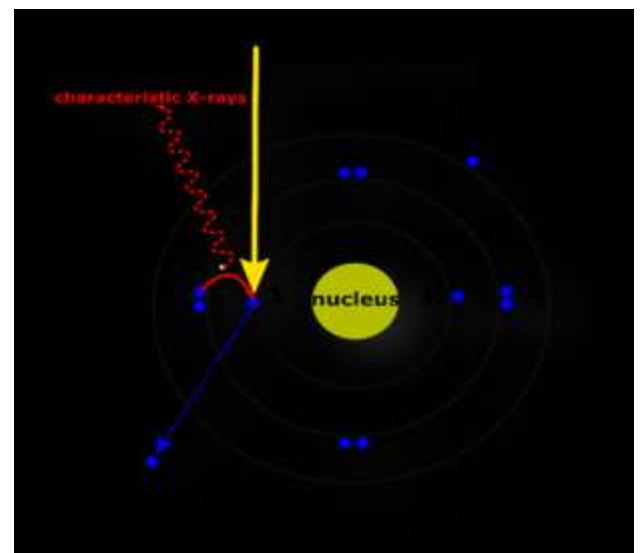
# Radiation Protection

## LECTURE EIGHT

### X Rays, X-Ray Regulations, Basic Nuclear Physics

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### ❖ X-Ray

### ❖ Properties of X-Ray

### ❖ Production of X-Ray

- Bremsstrahlung “ braking radiation ”
- Characteristic X-ray

### ❖ X-Ray Regulations

❑ **X-rays** are a form of electromagnetic radiation that has a higher energy and can pass through most objects, including the body

### ❑ Properties of X-Ray

- X-ray is a type of electromagnetic radiation with frequency of  $10^{18}$  Hz and wavelength of  $10^{-10}$  m (high frequency and very short wavelength).
- X-ray has the ability to pass through liquids, solids, gases and many materials.
- X-ray is traveling in a straight line.
- X-ray is invisible to the eye.
- Long x-ray exposure can be harmful to living organisms, and short exposure to x-rays is not harmful.
- X-rays can be a very dangerous type of radiation because they have a high frequency and high energy.
- When x-rays hit the material, electrons of this material will be ejected from the atom leaving behind a positive charge. For this reason, x-ray radiation is sometimes known as ionizing radiation.