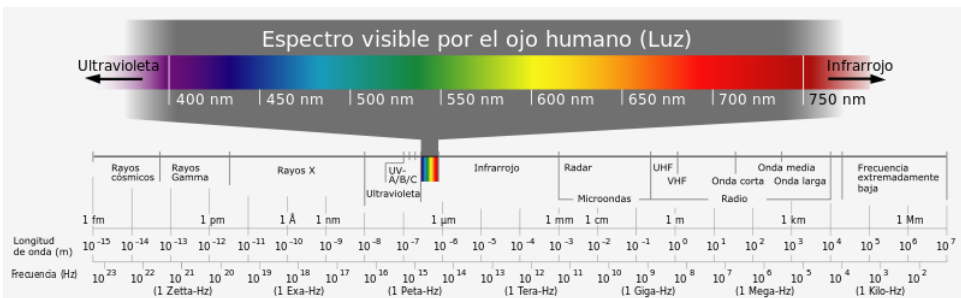


Estructura de la Materia
Espectro electromagnético

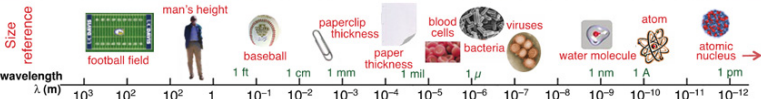
Martha M. Flores Leonar
FQ UNAM

13 de febrero de 2018

ESPECTRO ELECTROMAGNÉTICO



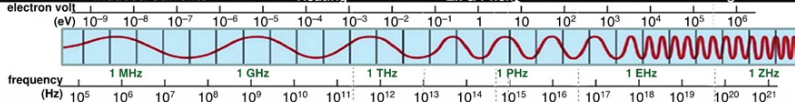
ELECTROMAGNETIC RADIATION SPECTRUM



Biological Effect

Non-ionizing Radiation (Green background)

Ionizing Radiation (Yellow background)



Bands

Radio Spectrum (Green)

Broadcast and Wireless (Light Green)

Microwave (Light Blue)

Terahertz (Purple)

Infrared (Red)

Ultraviolet (Blue)

X-rays & Gamma Rays (Yellow)

Soft X-ray (Light Yellow)

Hard X-ray (Dark Yellow)

Sources and Uses of Frequency Bands

AM radio 600kHz-1.6MHz

FM radio 88-108 MHz

Mobile Phones 900MHz-2.4GHz

RADAR 1-100 GHz

TV Broadcast 54-700 MHz

Wireless Data ~2.4 GHz

MRI (1.5T) 63.86 MHz

SmartMeter 0.9-2.45 GHz

Microwave Oven 2.4 GHz

Visible wavelengths (nm): 700, 695, 675, 575, 540, 470, 440

Fiber telecom 0.7-1.4 μ m

Dental Curing 200-350nm

Visible Light 700-400nm

Remotes 850 nm

Suntan 400-290nm

Night Vision 10-0.7 μ m

Medical X-ray 80 keV

Baggage Screen 160 keV

Bone Scan 140 keV

Cosmic Gamma Rays >10BeV

PET 511 keV

Screening 0.2-4.0 THz

"mm wave" "sub-mm"

electronics optics