

# The EM Spectrum

Physics

The whole spectrum, with wavelengths and uses.

*In order of increasing frequency.*

| Type        | Wavelength    | Use                                       |
|-------------|---------------|-------------------------------------------|
| Radio       | > 1 m         | Broadcasting, communications              |
| Microwave   | 1 mm – 1 m    | Radar, cooking, mobile                    |
| Infrared    | 700 nm – 1 mm | Heating, remote controls, thermal imaging |
| Visible     | 400–700 nm    | Sight                                     |
| Ultraviolet | 10–400 nm     | Sterilisation, fluorescence               |
| X-ray       | 0.01–10 nm    | Imaging, crystallography                  |
| Gamma       | < 0.01 nm     | Sterilisation, radiotherapy               |

$c = f\lambda$ . Higher frequency means shorter wavelength and higher photon energy, which is why gamma rays are ionising.