

Station Card: EM Spectrum

Wavelength and energy span many orders of magnitude

Dr. Anna Rosen

Name: _____ Section: _____

Date: _____

Station: _____ Group members: _____

Goal: Use the demo to make a claim supported by (1) at least one number/readout and (2) at least one sanity check.

Demo: /demos/em-spectrum/

Artifact: a completed “spectrum card” for one band.

1) Choose (or you’re assigned) one band: Radio / IR / Visible / UV / X-ray / Gamma.

2) Use the demo to record:

- one representative wavelength (with unit),
- the corresponding photon energy (with unit),
- one object example (Objects tab),
- one telescope/detector example (Telescopes tab).

3) Write one sentence:

- “This band is good for observing _____ because _____.”

 Word bank + sanity checks

Word bank: - **Wavelength** λ : “size” of the wave; longer $\lambda \rightarrow$ lower photon energy. -

Photon energy: energy per photon (not the same thing as brightness). - **Band names:** labels we give to wavelength ranges (radio \rightarrow gamma).

Key relationship (photon energy scaling):

$$E \propto \frac{1}{\lambda}$$

Sanity checks: - Ordering: Radio (lowest energy) \rightarrow ... \rightarrow Gamma (highest energy). - Shorter wavelength should correspond to larger energy readouts. - Use convenient units: nm/ μ m/mm/m for λ ; eV/keV/MeV for energy.