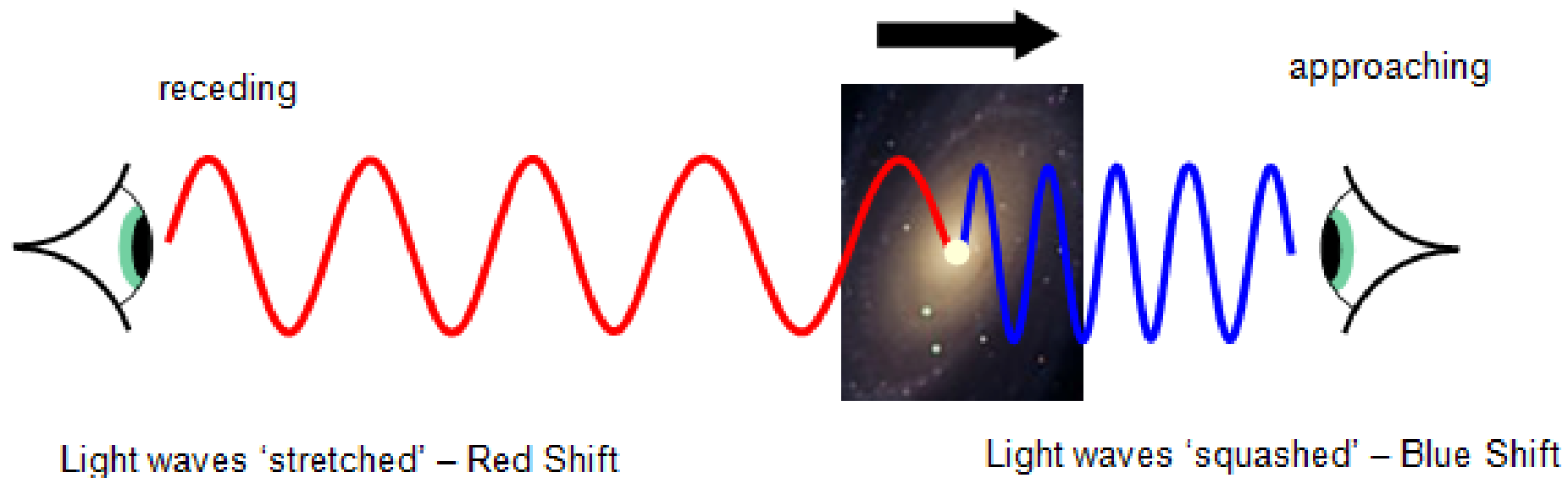
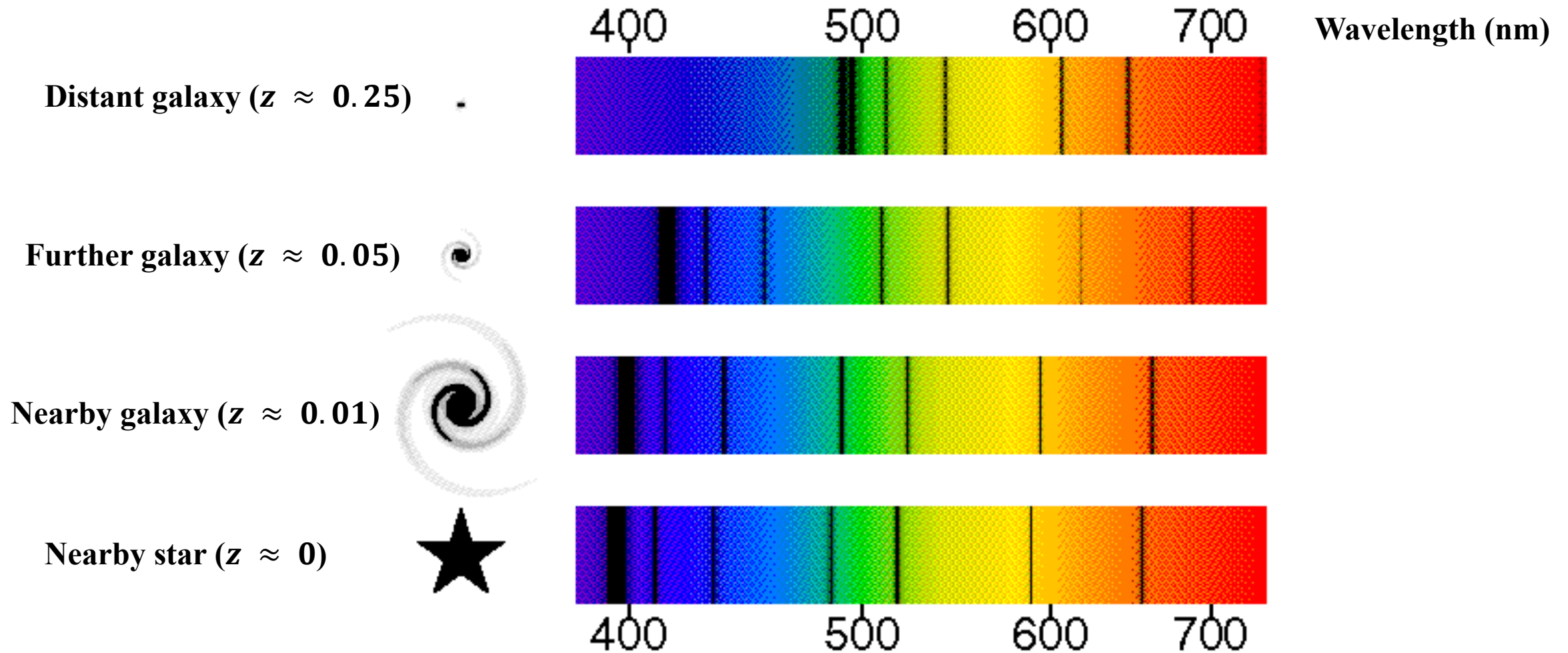


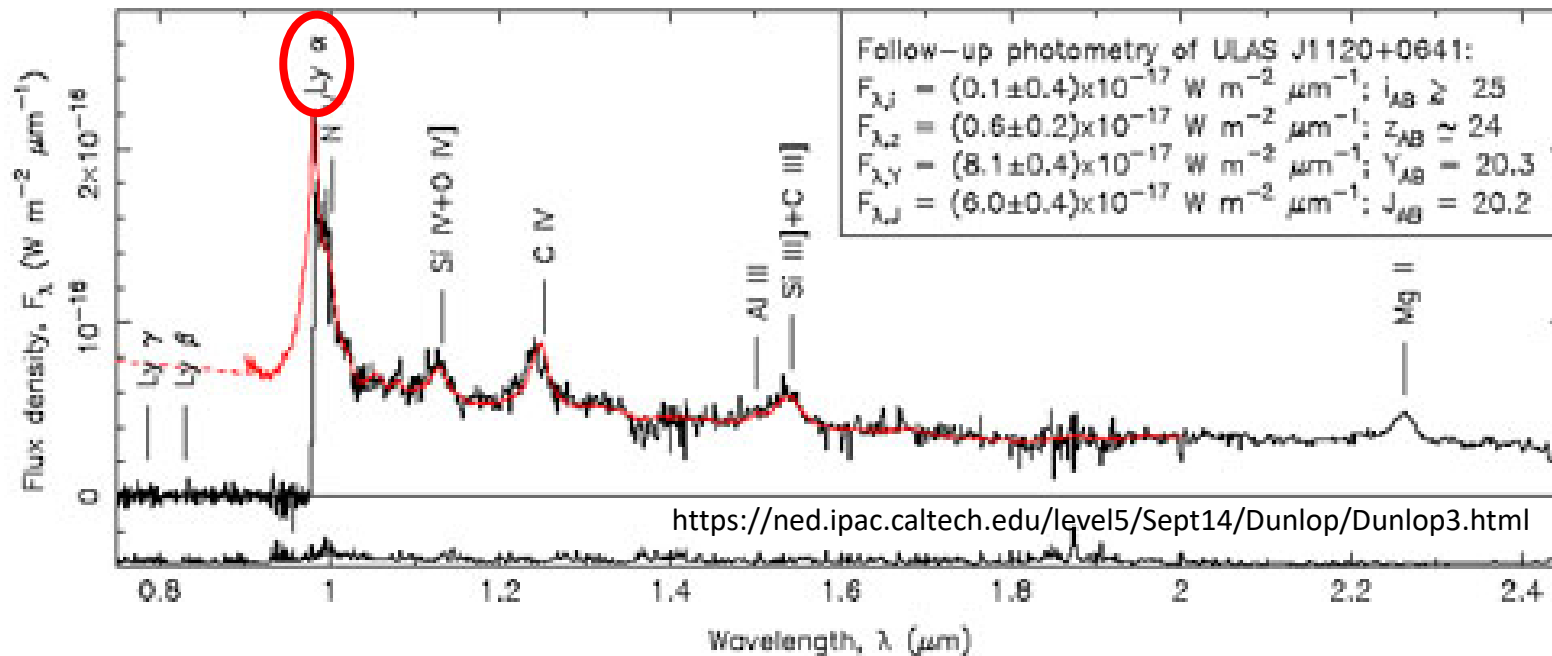
Doppler Shift for Light



Doppler (Red) Shift of Astronomical Sources



Doppler (Red) Shift of a Distant Quasar



The near-infrared spectrum of quasar ULASJ112001.48+064124.3

[Lyman-alpha line - Wikipedia](#)

In hydrogen, its **wavelength** of 1215.67 angstroms (121.567 nm or $1.21567 \times 10^{-7} \text{ m}$), corresponding to a frequency of 2.47×10^{15} hertz, places the Lyman-alpha ...

$$z = \frac{\lambda_{\text{observed}} - \lambda_{\text{Rest Frame}}}{\lambda_{\text{Rest Frame}}}$$

$$z = \frac{970 \text{ nm} - 122 \text{ nm}}{122 \text{ nm}} \approx 7$$