

University of Virginia

Department of Physics

Physics 606: How Things Work II

Lecture #27 Slides:

Sunlight

Sunlight

Question:

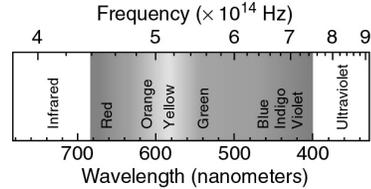
When you look up at the sky during the day, is the light from distant stars reaching your eyes?

Observations About Sunlight

- Appears whiter than most light
- Casts shadows
- Makes the sky appear blue
- Becomes redder at sunrise and sunset
- Reflects from many surfaces, not all metallic
- Bends and separates into colors in materials

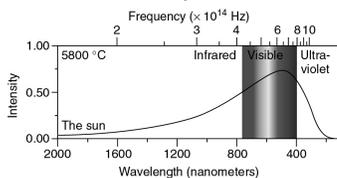
Light

- Medium-wavelength electromagnetic waves
- The range of wavelengths we can see



Spectrum of Sunlight

- Thermal agitation make charges accelerate
- Highly agitated charges emit light
- The sun is a black-body at 5800°C



Rayleigh Scattering

- Passing sunlight polarizes particles in air
- Fluctuating polarization \rightarrow light emission
- Air particles scatter light (absorb & reemit)
- Air particles too small to be good antennas
- Long-wavelengths (reds) scatter poorly
- Shorter-wavelengths (violets) scatter better
- Scattered light is bluish in appearance