

Review Exam 2

Ch 4 Spectroscopy

Vocabulary

Spectrum	Spectroscope	Diffraction Grating
Continuous Spectrum	Emission Spectrum	Absorption Spectrum
Fraunhofer Lines	Helios	Atom
Proton	Nucleus	Electron
Shell	Ground State	Orbitals
Ionized	Excited State	Photons
Fluorescence	Chemical Bonds	Rotation
Vibration	Line Broadening	Zeeman Effect

ÿ Know what a spectrum is

ÿ Know what a spectroscope is and how the diffraction grating is used

ÿ Know what a continuous spectrum is

ÿ Know what an emission spectrum is and how it is formed

ÿ Know what an absorption spectrum is and how it is formed

ÿ Understand what is meant by the Fraunhofer lines and where they come from

ÿ Understand what Kirchoff's Laws say

ÿ Know what element was discovered on the Sun before it was seen on Earth

ÿ Know the different parts of the atom, where they are found, and the charge on each part

ÿ Understand the concept of the ground state, excited state and ionization

ÿ Know what a photon is

ÿ Know how photon energy is calculated

ÿ Know that light acts both as a wave and a particle

ÿ Know the 2 ways a hydrogen electron may fall back to the ground state and what is emitted in both ways

ÿ Know what fluorescence is

ÿ Understand that a molecule is held together by chemical bonds

ÿ Know what is emitted by a molecule when you have an electron transition or rotation or vibration

ÿ Know what can be determined from the spectrum of some object

ÿ Understand that more complex atoms may have any number of possible transitions with all of those electrons

ÿ Understand that the number of atoms can determine the width of a spectral line

ÿ Understand how higher temperatures can affect the spectrum

ÿ Know what line broadening is and how it may occur

ÿ Know how a magnetic field may affect the width of spectral lines (Zeeman Effect)

Chapter 5 Telescopes

Vocabulary

Optical Telescopes	Reflector	Refractor
Primary Mirror	Secondary Mirror	Focal Length
Newtonian Telescope	Cassegrain Telescope	CCD
Pixels	Coma	Schmidt-Cassegrain

Photometry	Light Gathering	Resolving Power
Angular Resolution	Diffraction Limits	Adaptive Optics
Interferometry	Infrared Telescopes	Ultraviolet Telescopes

- ÿ Understand what is meant by the term optical telescope
- ÿ Know the difference between the 2 main types of telescopes: reflectors and refractors
- ÿ Know what a primary mirror and secondary mirror is
- ÿ Know what is meant by the focal length
- ÿ Know why as telescopes have gotten bigger, reflectors are better than refractors
- ÿ Understand several different types of reflectors: Newtonian, Cassegrain, and Nasmyth
- ÿ Know what a CCD is and why it is better than film
- ÿ Know what pixels are and why more is better
- ÿ Know why we do image processing
- ÿ Know how coma affects the views and how the Schmidt-Cassegrain solves that
- ÿ Know what photometry is and why we do it
- ÿ Know what is meant by light gathering ability and resolving power is
- ÿ Understand how we determine the area of a mirror and how much more light a telescope that is 2x as big as another telescope will gather
- ÿ Know which telescopes are the largest in the world
- ÿ Know what is meant by angular resolution and diffraction limits
- ÿ Know how the wavelength affects the diffraction limits
- ÿ Know how atmospheric blurring can occur
- ÿ Understand the concept of adaptive optics
- ÿ Understand what radio astronomy is
- ÿ Understand why radio telescopes are so big and how their angular resolution compares with optical telescopes
- ÿ Know why we can use a radio telescope 24 hours a day and why radio astronomy has an advantage over optical telescopes
- ÿ Understand the concept of interferometry
- ÿ Know what the Very Large Array is
- ÿ Understand why we must put some telescopes in space
- ÿ Know that infrared, UV, and X-rays telescopes are in space
- ÿ Understand how the mirrors are set in the Chandra X-ray Telescope

Chapter 6 The Solar System

Vocabulary

Minor Planets	Solar System	Comparative Planetology
Extrasolar Planet	Eccentricity	Terrestrial Planets
Jovian Planets	Interplanetary Matter	Solar Wind
Mariner 10	Pioneer Venus	Magellan
Solar Nebula	Nebular Theory	Condensation Theory
Interstellar Dust	Condensation Nuclei	Accretion

- ÿ Know what 6 objects the ancient Greeks knew of in the sky and also that they know of meteors and comets

- ÿ Know when (what century) much of our knowledge changed in astronomy and why
- ÿ Know how the discovery of the phases of Venus and the 4 large moons of Jupiter by Galileo helped change our ideas of the heavens
- ÿ What has helped our understanding of the cosmos
- ÿ Know what the minor planets are
- ÿ Understand what we mean by the term solar system
- ÿ Understand what is meant by the term comparative planetology
- ÿ What is meant by extrasolar planets and about how many have we discovered
- ÿ Understand the 8 planetary properties we discussed in class
- ÿ Know the order of the planets from the Sun outward
- ÿ Know what is meant by the term eccentricity
- ÿ Know that the eccentricities of the planets are almost circular and which 2 planets have the largest eccentricities
- ÿ Understand that the planets orbit the Sun on nearly a flat plane
- ÿ Know the difference between the terrestrial planets and the Jovian planets (there are many ways in which they are different)
- ÿ Know what interplanetary matter is and how we get dust sized particles
- ÿ Know what the solar wind is
- ÿ Know how asteroids and meteors are distinguished from each other
- ÿ Know why comets are important
- ÿ Know what the different spacecraft explored: Mariner 10, Pioneer Venus, Magellan, Mariner 4, 6, 7, & 9, the Viking 1 & 2, Pathfinder and Sojourner, Pioneer 10 & 11, Voyager 1 & 2, Galileo, and Cassini
- ÿ Understand some of the early ideas about where the solar system came from
- ÿ Know what the solar nebula is and what the nebular theory says
- ÿ Understand the condensation theory and why interstellar dust is important
- ÿ Understand what is meant by condensation nuclei and accretion
- ÿ How did heat help in the formation of the solar system