

## Swihart Ch. 10 Main Concepts

Milky Way Galaxy, Sun's location in MW

Rotation curve, dark matter, circular motion, mass estimate of MW

Optical depth of stars in elliptical galaxies

Doppler broadening in ellipticals, characteristic speed of stars

Virialized elliptical galaxy, mass estimate

(Analogy of KE of stars to thermal energy of gas)

Mass-to-light ratio, dark matter

Hubble's Law, cosmological redshift

Expanding universe, "peculiar" (random) motion of galaxies

Active Galactic Nuclei (AGN), radio galaxies with lobes

Non-thermal radiation and radio spectrum, spectral index ("alpha")

Central black hole energy generation, accretion disk heating/collisions/viscosity

Mass accretion rate for black hole disk, disk temperature estimate

Eddington luminosity limit

Quasars, causality and size limit, thermal temperature estimate