

Exercises in Extragalactic Astrophysics

| <i>Topic</i> | <i>Notes</i> |
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| Introduction | nature of these notes |
| Inventory | basics of what is in the universe |
| Light I | fluxes, bandpasses, K -corrections, surface bright dimming |
| Light II | Planck radiation, emission and absorption lines, scattering |
| Telescopes | optical designs, PSFs |
| Atmosphere | transmission, coherence, emission |
| Detectors | throughput, noise models |
| Images | calibration, backgrounds, centroids, PSFs, fluxes |
| Spectra | calibration, backgrounds, extraction, LSFs |
| Distance ladder | parallax, photometric parallax, standard candles |
| Cosmology | expansion, lookback time, luminosity distance, angular diameter distance |
| Structure formation | linear growth, spherical collapse, halo formation |
| Galaxies | observations and trends for ellipticals, spirals |
| Interstellar medium | |
| Star clusters | observations of open and globular clusters |
| Stellar evolution | main sequence, post-MS phases |
| Stellar populations | ingredients, uncertainties, methods |
| Stellar dynamics | relaxation, CBE, Jeans theorem, dynamical friction, tidal effects |
| Galaxy dynamics | velocity dispersion, rotation, dynamical modeling |
| Emission line spectra | |
| Star formation | |
| Central black holes in galaxies | |
| Active galactic nuclei | |
| Nucleosynthesis | processes, time scales, yields |
| Chemical evolution | single zone models |
| Gravitational Lensing | |
| Groups & Clusters | |
| High redshift galaxies | |