

3rd Midterm Directions

1. Covers chapters 37,38,39 and 40 with emphasis on 37,38 and 39
2. You can have the usual crib sheet
3. Bring a calculator you might need in a couple of cases

Emphasis on: 1. Simultaneity -Time dilation and length contraction – Proper time and length- Lorenz transformations – Velocity transformations and addition

2. Relativistic momentum – Mass-Energy relationship – rest mass and rest energy – invariant space time interval

3. Space-time diagrams and their uses (Review problems-slides and handouts)

4. Atomic spectra – Absorption and emission lines

5. Isotopes

6. Understand how to use and interpret Stefan-Boltzmann and Wien's law

7. Light as a particle, photons and their energy, mass and wavelength-Einstein relationships

8. Matter as a wave – De Broglie wavelength – particle in a box – allowed states and energies

9. Bohr model its assumption, derivation and scaling . Stationary states – energy diagrams-ground states-emission and absorption

10. Photoelectric effect in all its glory and scaling

11. Allowed energy states for a particle in a box – Similarities and differences with Bohr's hydrogen atom – Angular momentum

12. Probability – Wave function, meaning and properties –normalization
13. Interference pattern with electrons – meaning wavelength – comparison with light
14. Beats – wave-packets –
15. Heisenberg uncertainty principle – form and meaning
16. Loosing interference pattern by watching electronss

Make sure that you review and understand solutions to HW 11 and 12 and part of 10