Review for Exam 1

Below you will find a list of topics that you will be responsible for knowing for Exam 1 as well as a list of topics that will not be covered. Remember that you are allowed a formula sheet for the test!

Although I've tried to cover everything, anything not explicitly mentioned is your responsibility

Chapter 1
Galilean relativity
Einstein postulates
Lorentz transformation
Time dilation
Length contraction
Relativistic addition of velocities
Doppler effect

Not covered: Spacetime diagrams

Chapter 2
Relativistic momentum
Relativistic Energy
Conservation of energy in special relativity
Conservation of momentum in special relativity
Invariant mass

Not covered: Lorentz transformations for E,$\boldsymbol{p}$, general relativity

Chapter 3
Quantization of charge (qualitative)
Blackbody radiation
Stefan-Boltzmann law
Spectral characteristics
u(λ), average energy $\overline{E}$, classical calculation of spectrum
Planck's law, quantization of energy, Planck's calculation of spectrum
Photo-electric effect
X-rays, Compton effect

Chapter 4
Atomic Spectra, Rydberg-Ritz series
Rutherford's nuclear model
Bohr's nuclear model
- quantization of angular momentum, orbital radius, energy,
- explanation of hydrogen atom spectrum

Correspondence principle