Power radiated per electron per radius

Power per particle of a certain mass
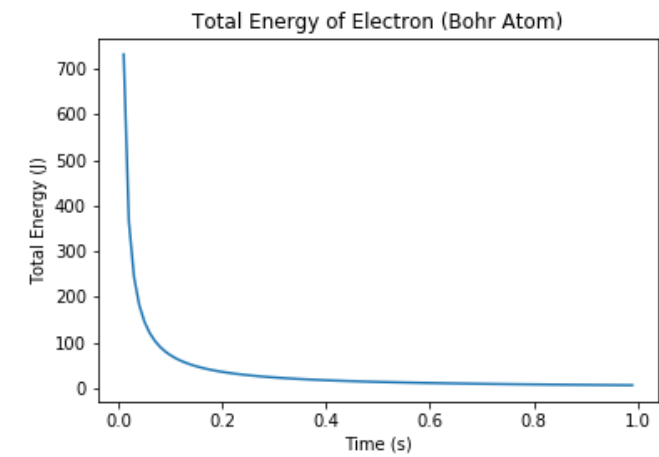

Total Energy of Electron (Bohr Atom)

This figure shows the power radiated away by synchrotron radiation from an electron orbiting at a constant radius, which approximates a simple circular synchrotron storage ring. This power is radiated with a forward angle. This figure shows how designing a synchrotron with a large radius can decrease the energy loss from synchrotron radiation.
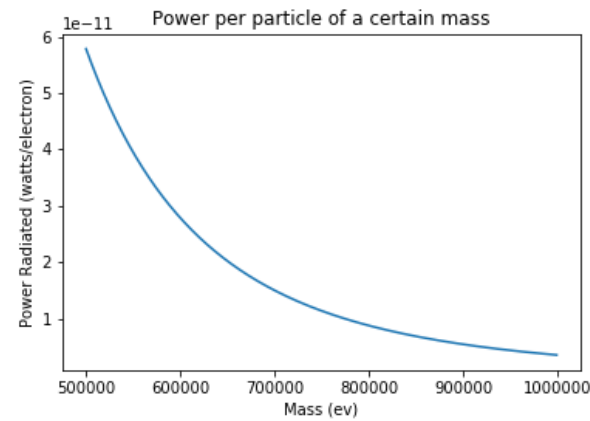
This figure shows the power radiated away from particles with certain masses by synchrotron radiation. This is at 50Gev and a particles mass has a large influence on the power radiated away.

This figure shows the total energy of a electron which is orbiting around a Bohr atom model. This is not corrected relativistically, however it shows the total energy is changed by the synchrotron radiation.

These figures give context to the variables that effect how much synchrotron radiation leaves a system as well as the order of magnitude of energy loss expected when designing a system like a Synchrotron ring that has to take synchrotron radiation into account. These figures would be under a section talking about how synchrotron radiation is a important parameter to design around.

This week I corrected some of my calculations from last week and produced various new figures on the different parameters that effect synchrotron radiation and also trying to model the total energy loss in systems. Moving forward I want to finish modeling a spiral trajectory of an electron that is losing energy under synchrotron radiation as I think it would be illuminate the speed of a electrons collapse without outside energy input. I also want to correct the bohr atom relativistically to ascertain the energy loss difference with and without relativistic corrections.

Brian worked on making new 3D figures of the power radiated per solid angle for synchrotron radiation produced in undulators. His figures are posted separately.