ELEMENTARY PARTICLE PHYSICS
WS 2016/2017: Exercise sheet 0

1. Compute your mass in MeV, the length of your body in MeV^{-1} and your age in km in a unit system with $\hbar = c = 1$. How far away is a light quantum which was emitted at the time of your birth ?

2. Two lumps of sugar, say glucose, (edge length 1 cm, mass 10g) are thrown at each other with a velocity of 10 m/sec each such as to collide centrally. What is the total energy and what is the kinetic energy per glucose molecule ?
   (glucose: $^{12}C_6\,^{1}H_{12}\,^{16}O_6$)

3. Assume that a free neutron could decay into a proton and an electron, $n \rightarrow p + e^-$. What would be the electron energy in such a two body decay in the rest frame of the neutron ?