QGP Homework 23.04.2021

A) Show the relation of "**s**" for the center-of-mass system: $s := (p_a + p_b)^2 \overset{CMS}{=} (E_a + E_b)^2$

B) Calculate the maximum beam energy for the LHC with $B_{LHC,max} = 8.3$ T and $r_{LHC,bend} = 2804$m

C) Show that the following is correct for the CMS system in case of p >> m for a collider with two different ion species and same B-field: $y_{cm} = \frac{1}{2} \ln \frac{Z_1 A_2}{A_1 Z_2}$

D) Install ROOT (**https://root.cern/**), in case of questions please send me an email: **schmah@physi.uni-heidelberg.de**