Homework IV

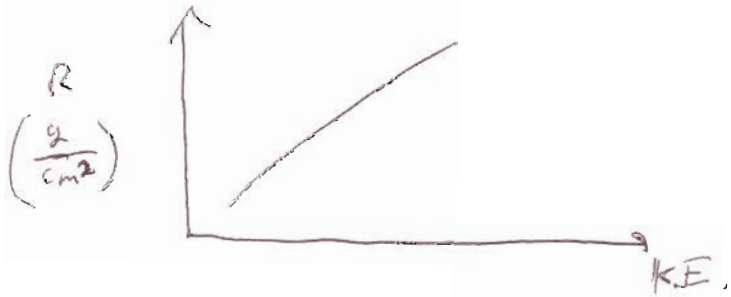
1.) Show that the maximum energy transfered in a relativistic heavy ~~collision~~ elastic collision is

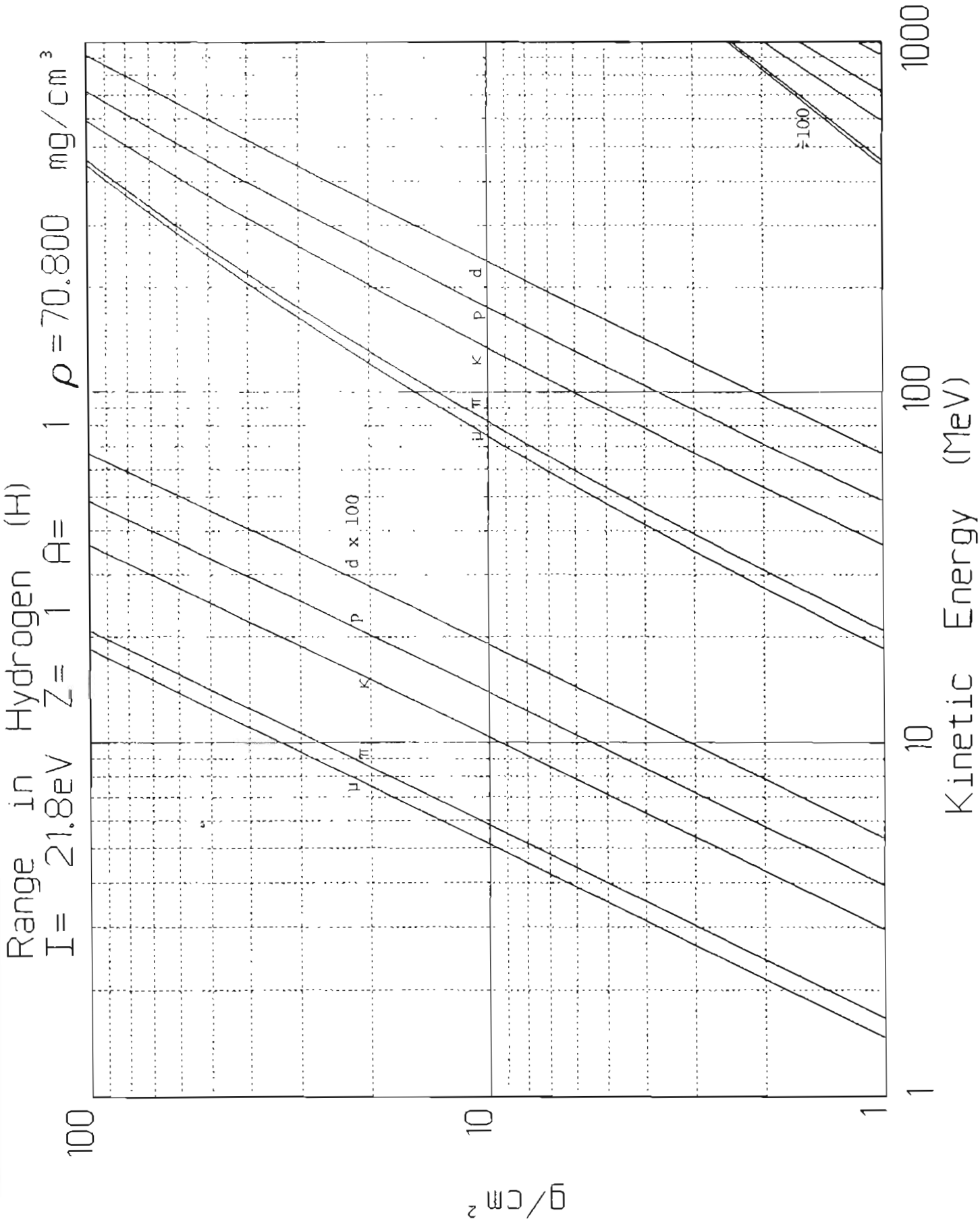
$$T_{max} = \frac{(pc)^2}{\frac{m_e c^2}{2} + \frac{1}{2}\left(\frac{M}{m_e}\right)^2 c^2 + \sqrt{(pc)^2 + (Mc^2)^2}}$$

where p = incident momentum of incident particle of mass M

m_e = mass of target electron which is initially at rest

2.) Use GEANT 4 to determine the Range of the incident particle chosen in Homework IV as a function of Energy ~~=~~ in Hydrogen.




Range in Hydrogen (H)
I= 21.8eV Z= 1 A= 1 ρ=70.800 mg/cm³
g/cm²
100
10
1
Kinetic Energy (MeV)
1
10
100
1000
μ
π
K
p
d
d x 100
÷100