Homework 9 PS405

1.

Due: Friday, November 4, 2016

MeV beam of α particles strikes an aluminum target.		
Determine the distance of closest approach D between the α particles and the alumenergy. (note: this is the "head on" distance of closest approach).	ninum nuclei at t	his
Calculate the number of aluminum nuclei per unit volume in the target. (Aluminum has $Z=13$, $A=27$, and density 2.70 g/cm ³ , $m=26.98$ g/mol)	D =	fm
Suppose the beam of α particles has a flux of 10^5 α particles/sec. If the thickness	of the aluminum	
Flux into the backward hemisphere = What is the distance of closest approach for an α particle scattered at 90°?	<i>α</i> par	ticles/sec
	Determine the distance of closest approach D between the α particles and the alunenergy. (note: this is the "head on" distance of closest approach). Calculate the number of aluminum nuclei per unit volume in the target. (Aluminum has $Z=13$, $A=27$, and $density\ 2.70\ g/cm^3$, $m=26.98\ g/mol$) # Al nuclei / m^3 Suppose the beam of α particles has a flux of $10^5\ \alpha$ particles/sec. If the thickness is $10^4\ cm$, calculate the number of α particles scattered per second into the backw	Determine the distance of closest approach D between the α particles and the aluminum nuclei at the energy. (note: this is the "head on" distance of closest approach). $D = \underline{\hspace{2cm}}$ Calculate the number of aluminum nuclei per unit volume in the target. (Aluminum has $Z = 13$, $A = 27$, and $density 2.70$ g/cm³, $m = 26.98$ g/mol) $\# \text{ Al nuclei / m}^3 = \underline{\hspace{2cm}}$ Suppose the beam of α particles has a flux of $10^5 \alpha$ particles/sec. If the thickness of the aluminum is 10^4 cm, calculate the number of α particles scattered per second into the backward hemisphere. $\# \text{ Al nuclei / m}^3 = \underline{\hspace{2cm}} \# \text{ Al nuclei / m}^3 = \underline{\hspace{2cm}} $