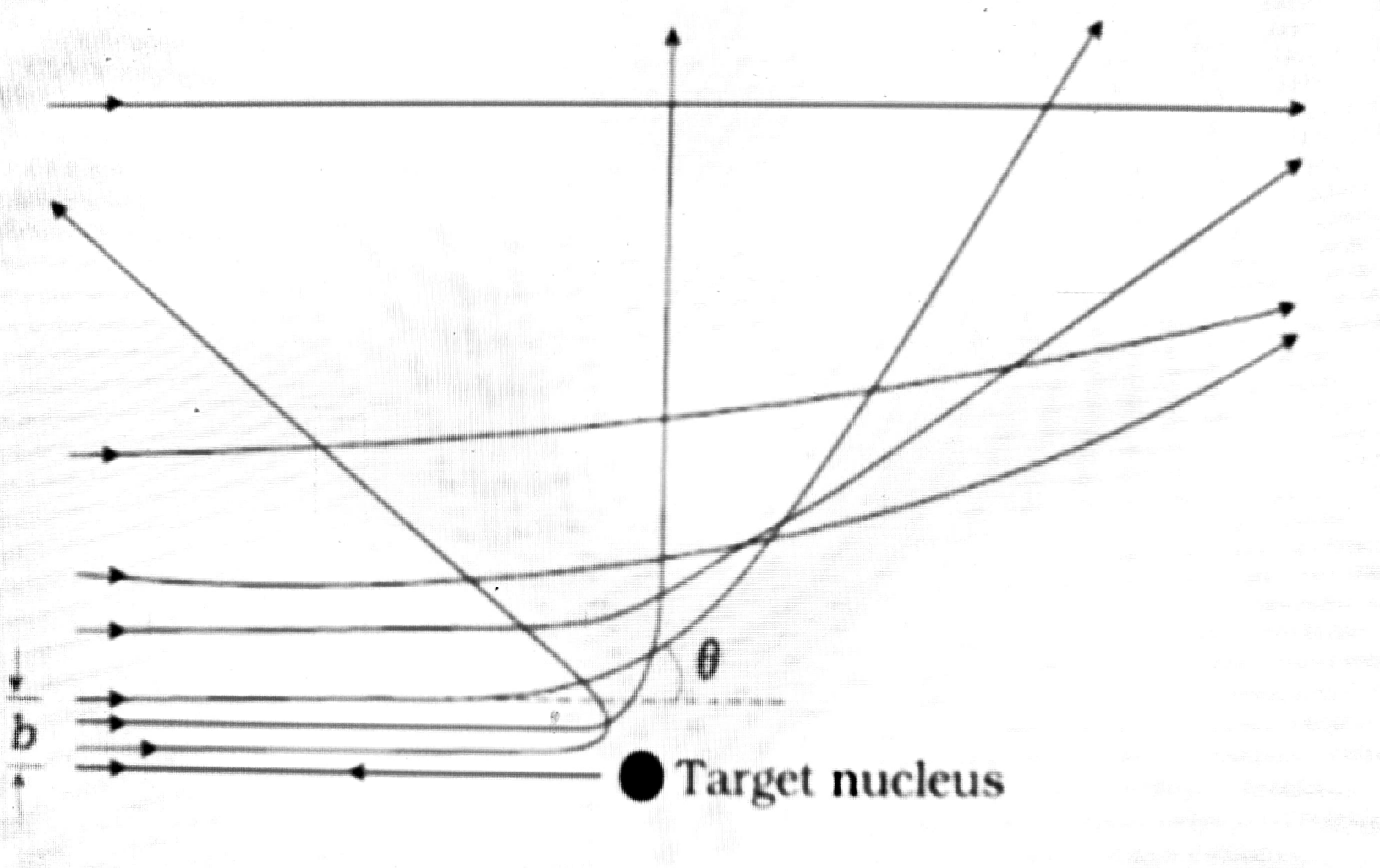
[#] Some Important Terms Related to α-particle Scattering:-

[#] Impact Parameter (b):-

⇒ It is the perpendicular distance of the velocity vector of α-particle from the central line of the nucleus, when the particle is far away from nucleus of the atom.

[#] Angle of Scattering:-

⇒ It is the angle made by α-particle when it gets deviated from its original path around the nucleus.


θ
b
Target nucleus

$$b = \frac{1}{4\pi\varepsilon_0} \cdot \frac{Ze^2 \cot(\theta/2)}{E_K}$$

Z = Atomic no. of nucleus

E_K = K.E. of α particle

θ = angle of scattering.

b = Impact parameter.