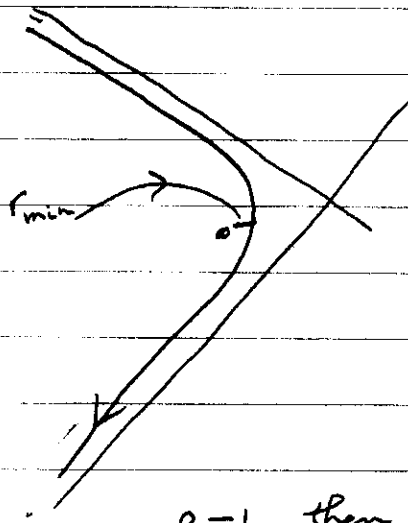


$E > 0$ or $e > 1$: hyperbola



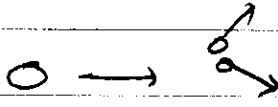
$$\frac{p}{r} = 1 + e \cos \psi$$

$$\Rightarrow r = \frac{p}{1 + e \cos \psi}$$

$$r_{min} = \frac{p}{1 + e}$$

$e = 1$, then we have a parabola

IV a) Collisions between particles

i) disintegration 

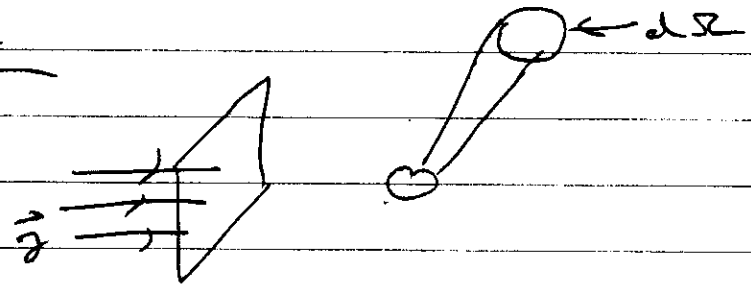
\vec{p} is conserved but E_{kin} is not

ii) elastic collision : the internal state of the particles does not change

$\Rightarrow \vec{p}$ and E_{kin} are conserved.

IV b) Scattering

Cross-section



J is the number of particles per unit time per unit area \perp beam