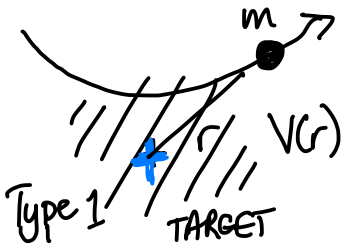
SCATTERING

outlines "scattering problem"

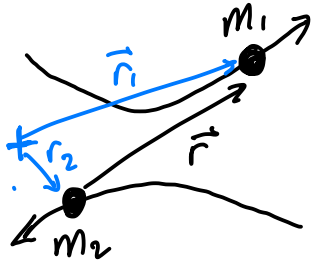
Concepts from CM

Deal with central force problems only; incoming free p'cle interacts with some $V(r)$ due to target

$\equiv$ only dependence, ie. spherically symmetric



r = distance from p'cle to origin
if [source of $V(r)$] $\equiv$ [TARGET] is FIXED



OR $V(r)$ between two p'cles with

$r = |\vec{r}_1 - \vec{r}_2|$

$\Rightarrow$ CM: can turn this into Type 1 problem (equivalent) ie. single-pcle problem by working w/ reduced mass $\mu = \frac{m_1 m_2}{m_1 + m_2}$

To get back to real 2-pcle situation: invert

$\vec{r} \equiv \vec{r}_1 - \vec{r}_2$

$\vec{R} \equiv \frac{m_1 \vec{r}_1 + m_2 \vec{r}_2}{M}$ = usually FIXED @ $\vec{0}$

$\vec{r}_1 = \vec{R} + \frac{m_2}{M}\vec{r}$, $\vec{r}_2 = \vec{R} - \frac{m_1 \vec{r}}{M}$