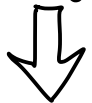


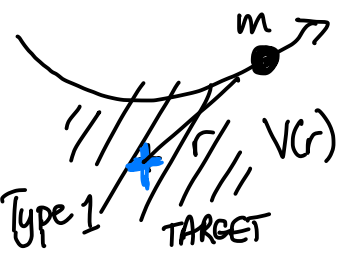
SCATTERING

defines "scattering problem"

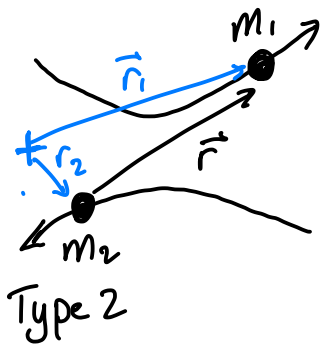
Concepts from CM



Deal with central force problems only; incoming free p'cle interacts with some $V(r)$ due to target
 only dependence, i.e. spherically symmetric



$r =$ distance from p'cle to origin if [source of $V(r)$] = [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 i.e. single-p'cle problem by working w/ equivalent reduced mass $\mu = \frac{m_1 m_2}{m_1 + m_2}$

To get back to real 2-p'cle 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 @ $\vec{0}$ (FIXED)

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

Diagram: An effective p'cle of mass μ is shown moving towards a potential barrier $V(r)$. The distance r is measured from the effective p'cle to the barrier. The diagram is labeled "effective p'cle" and "actual potential $V(r)$ between $m_1 \neq m_2$ ".