Invariant cross section

\[ \dot{v}_1, \dot{v}_2, \dot{v}_3 \]

\[ \rightarrow \]

\[ \rightarrow \]

\[ \eta_1, \eta_2 \]

\[ \vec{v}_{\text{ree}} = \vec{v}_1 - \vec{v}_2 + \text{rel. corr.} \]

in rest frame of 2

\[ \vec{v}_{\text{ree}} = \vec{v}_1 \]

number of collisions in volume \( dV \) in time \( dt \)
in the rest frame of 2 is

\[ d\nu = \sigma \vec{v}_{\text{ree}} n_1 n_2 \ dV \ dt \]

\[ \text{Green} \ is \ the \ number \ of \ incoming \ particles \]
per unit area per unit time

\[ n_2 \ dV \] is the number of 2 particles
in \( dV \)

\[ \sigma \] is the cross-section per particle

- \( d\nu \) is invariant because each collision is a physical event

We will reformulate \( d\nu \) in an invariant way by expressing \( d\nu \) in terms of invariants

\[ d\nu dt \] is invariant

so we have to express \( \sigma \vec{v}_{\text{ree}} n_1 n_2 \) in invariants