

Post/Prior formalism within DWBA

1. **Post formalism** of the DWBA amplitude for the transfer reaction $(bx) + A \rightarrow b + (Ax)$:

$$T_{post}^{DW}(\alpha' \leftarrow \alpha) = \langle \vec{p}', \alpha' - | \hat{V}_{post} | \vec{p}, \alpha + \rangle,$$

where $|\vec{q}, \nu \pm\rangle$ corresponds to the distorted wave function in the entrance or exit channel, and $V_{post} = V_{Ax}$ is the interaction of the bound particles in the *exit* channel.

2. **Prior formalism** of the DWBA amplitude for the transfer reaction $(bx) + A \rightarrow b + (Ax)$:

$$T_{prior}^{DW}(\alpha' \leftarrow \alpha) = \langle \vec{p}', \alpha' - | \hat{V}_{prior} | \vec{p}, \alpha + \rangle,$$

where $|\vec{q}, \nu \pm\rangle$ corresponds to the distorted wave function in the entrance or exit channel, and $V_{post} = V_{bx}$ is the interaction of the bound particles in the *entrance* channel.

Details of the DWBA may be found in [1,2].

[1] J.R. Taylor, Scattering theory: The quantum theory on nonrelativistic collisions, Dover Publications, 2006.

[2] G.R. Satchler, Direct Nuclear Reactions, Clarendon Press, Oxford, 1983.