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Long-range processes with two-particle intermediate states

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A variety of phenomena in the Standard Model and its extensions manifest in long-range processes involving on-shell multi-hadron intermediate states. Given recent algorithmic and conceptual progress, such processes are now realistic targets for lattice QCD. In this talk, I present a recently developed formalism that makes possible the determination of reactions of the form $1 + \mathcal{J} \rightarrow 2 \rightarrow 1 + \mathcal{J}$ from 2-, 3-, and 4-point functions in a finite-volume Euclidean spacetime. I also give an outlook for the study of more complicated reactions.

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