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Decomposition of Triple Collinear Splitting Functions

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In the kinematic region where three particles i, j, k are collinear, the multi-parton scattering amplitudes factorise into a product of a triple collinear splitting function and a multi-parton scattering amplitude with two fewer particles. These triple collinear splitting functions contain both iterated single unresolved contributions, and genuine double unresolved contributions. We make this explicit by rewriting the known triple collinear splitting functions in terms of products of two-particle splitting functions, and a remainder that is explicitly finite when any two of $\{i, j, k\}$ are collinear. We analyse all of the single unresolved singularities present in the remainder.

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