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Cwebs in multiparton scattering amplitudes

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Soft function exponentiates in terms of the Soft anomalous dimension; the Feynman diagrams contributing to it are called Cwebs. The colour and kinematics of a Cweb mix via a web mixing matrix – calculation of web mixing matrices at higher loop orders is a nontrivial task using the replica trick, and a long-awaited aim is to construct these matrices, bypassing the replica trick.
Our works contribute to both of these goals: To provide a more efficient algorithm to implement the replica trick, and to develop formal approaches to direct construction of these matrices. I will discuss our novel approach to Fused-Web along with the Uniqueness theorem, which facilitates the calculation of diagonal blocks of web mixing matrices without using the replica trick. Further, I will discuss the progress made in the direction of explicit calculation of web mixing matrices and conclude with the results at four loops, along with some all-order predictions.

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