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The R^* operation and combinatorial challenges at five loops

Monday, August 21, 2017 2:00 PM (20 minutes)

We show how an extended version of the R^* operation, a method to remove UV and soft IR divergences, can be used to calculate the poles of Feynman diagrams with arbitrary tensor structure from diagrams with fewer loops. We discuss solutions to combinatorial problems we encountered during the computation of the five loop QCD beta function, such as postponing Feynman rule substitutions, integral isomorphisms, and efficient tensor reductions.

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