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New multiloop capabilities of FeynCalc 10

Thursday 18 April 2024 17:00 (30 minutes)

We report on a new version of the FeynCalc package (arXiv:2312.14089) that features a large collection of useful routines for multiloop calculations. Those include topology identification and minimization, optimized tensor reduction, detection of equivalent or scaleless loop integrals and construction of Feynman parametric as well as graph representations for master integrals. In addition to that, we provide a collection of convenient interfaces ("FeynHelpers") to popular tools such as QGRAF, Fiesta, pySecDec, LoopTools, KIRA, FIRE or Fermat. All this is intended to maximally streamline multiloop calculations when using FeynCalc and FeynHelpers together with a FORM-based calculational setup. Furthermore, we will briefly discuss how this machinery was employed in a study of "soft-overlap" contribution to $B_c \rightarrow \eta_c$ transition form factors at large hadronic recoil (arXiv:2309.08410).

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