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Gluon- and Quark-Jet Multiplicities

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We present a new approach to consider and include both the perturbative and the non-perturbative contributions to the multiplicities of gluon and quark jets. Thanks to this new method, we have included for the first time new contributions to these quantities obtaining next-to-next-to-leading-logarithmic resummed formulas. Our analytic expressions depend on two non-perturbative parameters with a clear and simple physical interpretation. A global fit of these two quantities shows how our results solve a longstanding discrepancy in the theoretical description of the data.

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