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Theoretical Uncertainties on the determination of the strong coupling from Z p_T

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I will analyse the theoretical uncertainties inherent in the determination of the strong coupling from the transverse momentum (p_T) spectrum of the Z boson. Such analyses require fine control of percent-level theoretical effects in small p_T region, not only in terms of their magnitude but also of their shape and that of the corresponding theoretical uncertainties. This is theoretically extremely challenging. In this talk I will analyse the associated theoretical uncertainties via the novel theoretical nuisance parameter approach. In particular, I will focus on the perturbative uncertainty from missing higher orders in resummation, the uncertainty related to the nonperturbative model, and that associated with the parton distribution functions.

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