

Nonperturbative Corrections for Energy Correlators: R-scheme for Precision Predictions

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Energy Correlators at the Collider Frontier workshop
MITP, Mainz
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arXiv:2305.19311 S.Schinder, IS, Z.Sun = S.³ '23

arXiv:2405.19396 K.Lee, A.Pathak, IS, Z.Sun



Outline

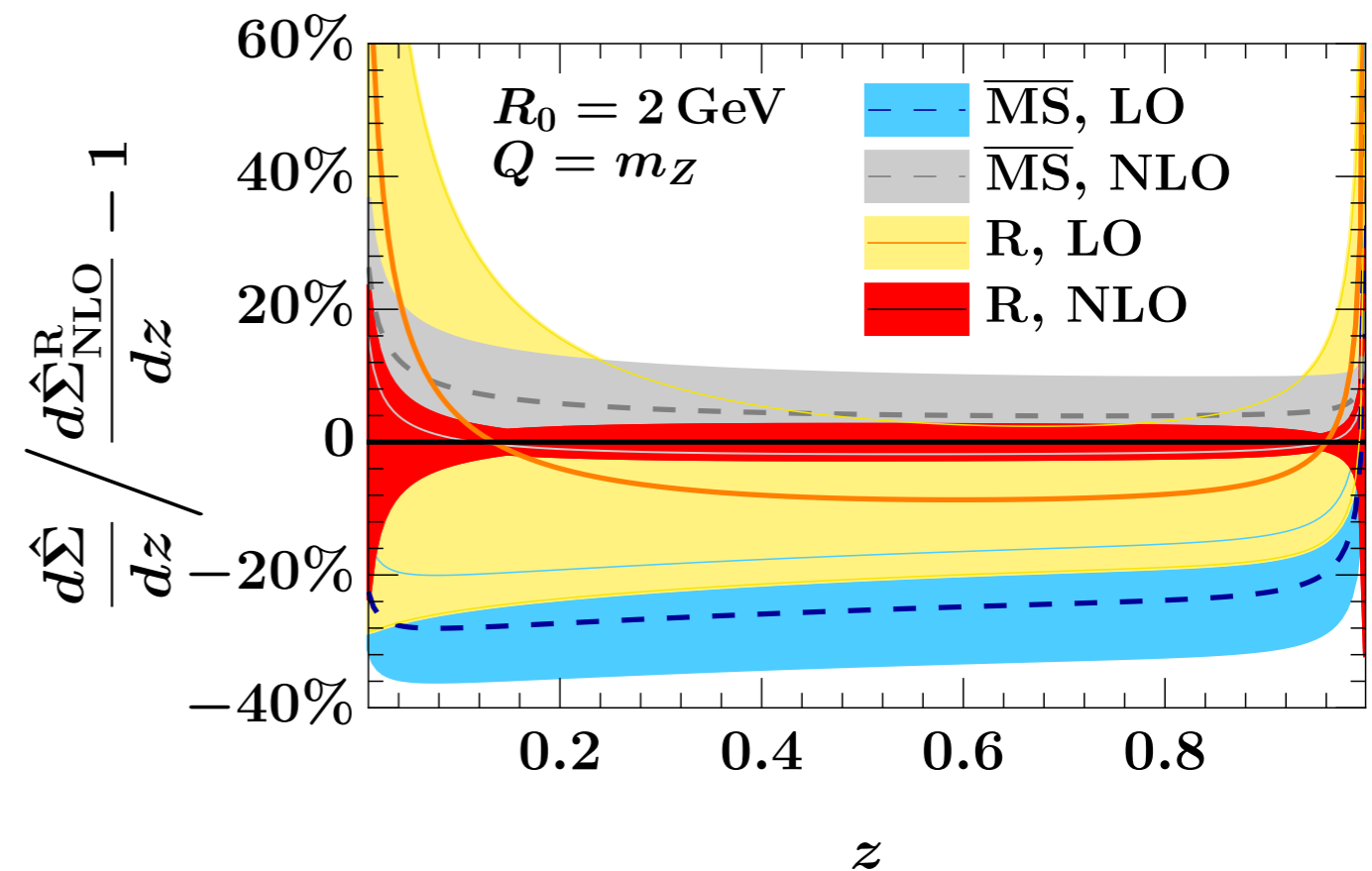
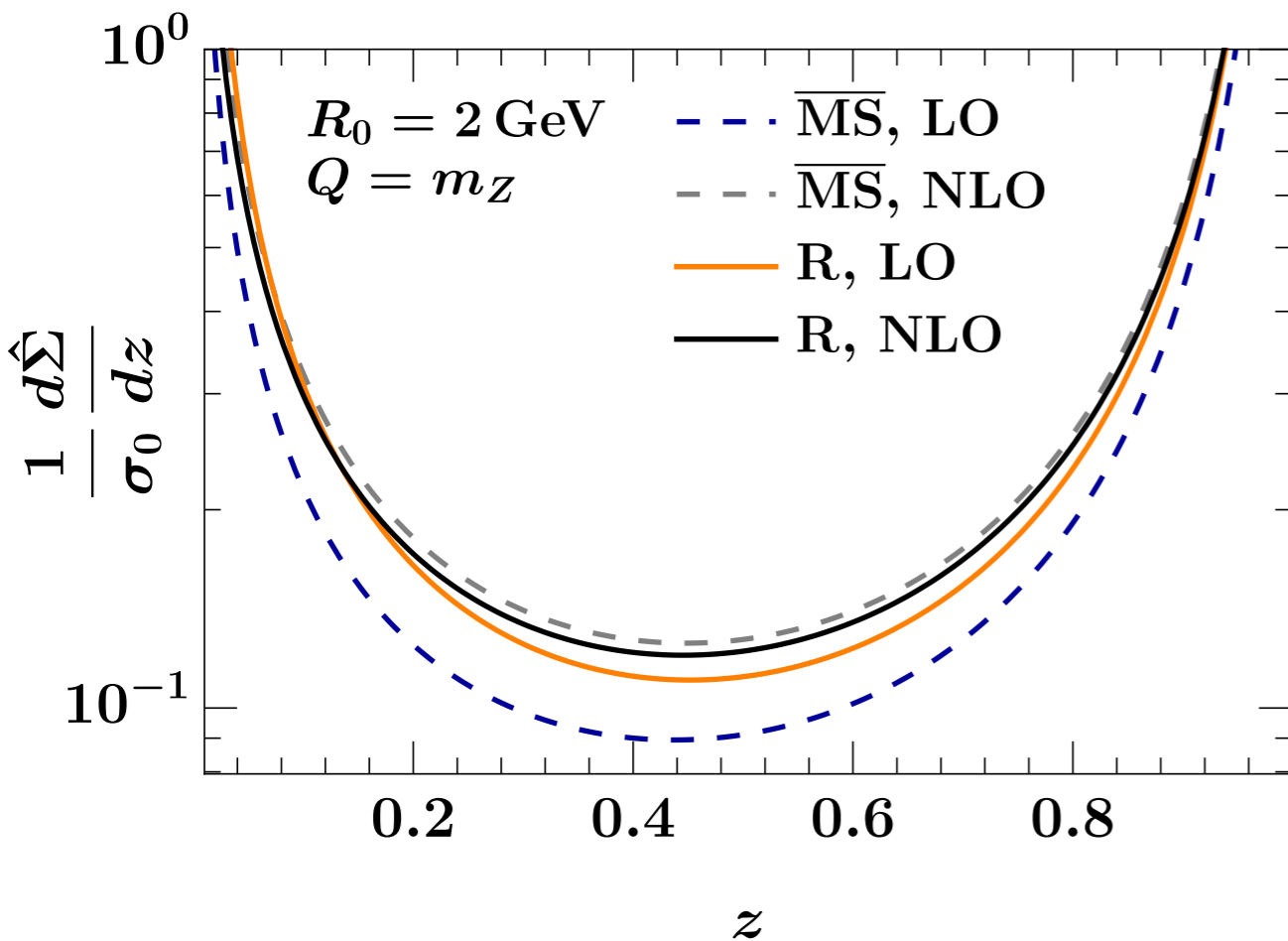
My Talk: Formalism and basic EEC results

- Board {
- Operator Expansion for Nonperturbative Effects
 - Universality Classes for Hadronization in e^+e^-
 - Defining Nonperturbative parameters:
renormalization schemes and renormalons
 - Results for EEC in e^+e^-

Part 2 by Zhiquan Sun: extension to projected N-point Correlators, small angle limit (e^+e^- and pp), and cool results

Perturbative Results: $\overline{\text{MS}}$ scheme versus R scheme

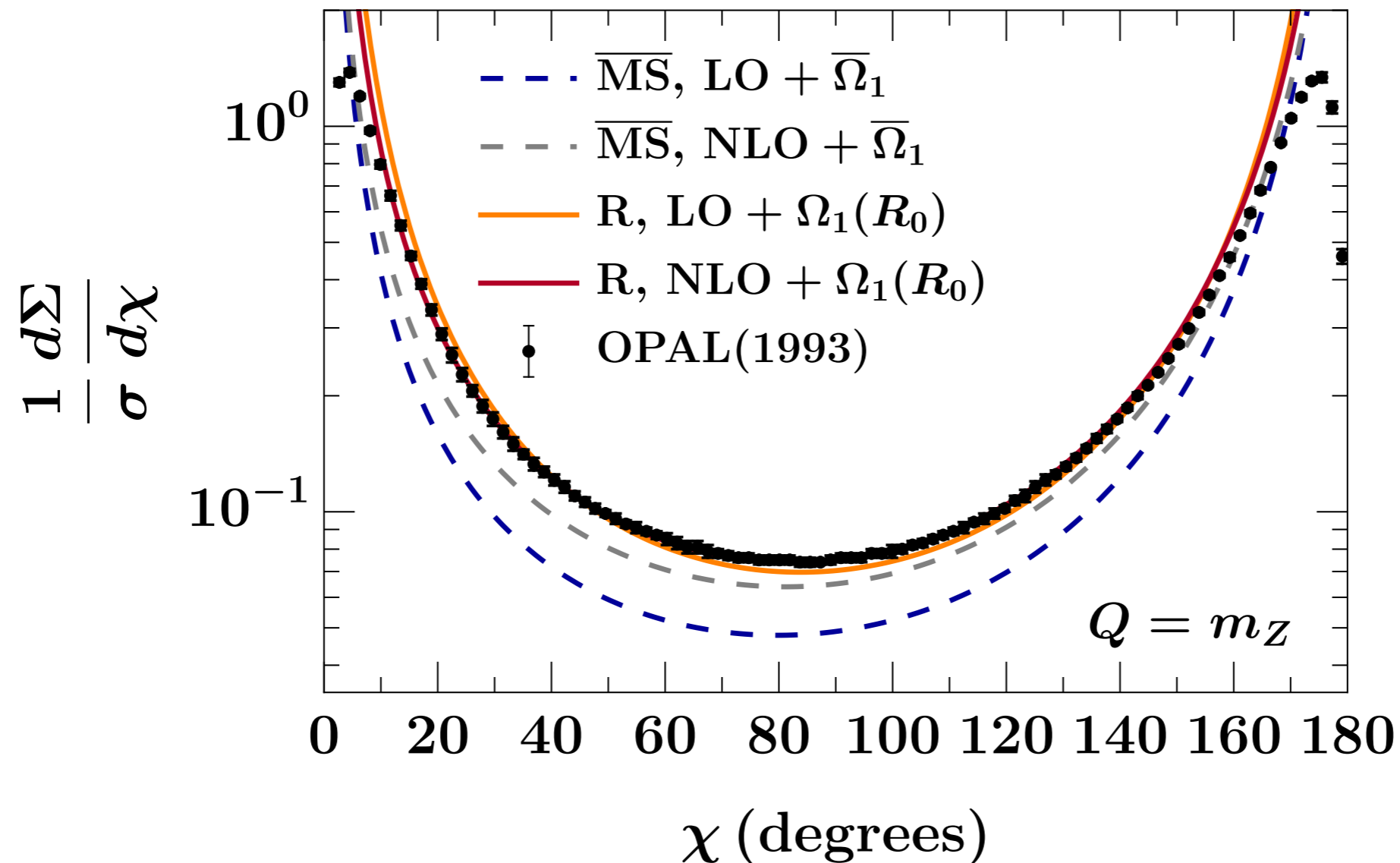
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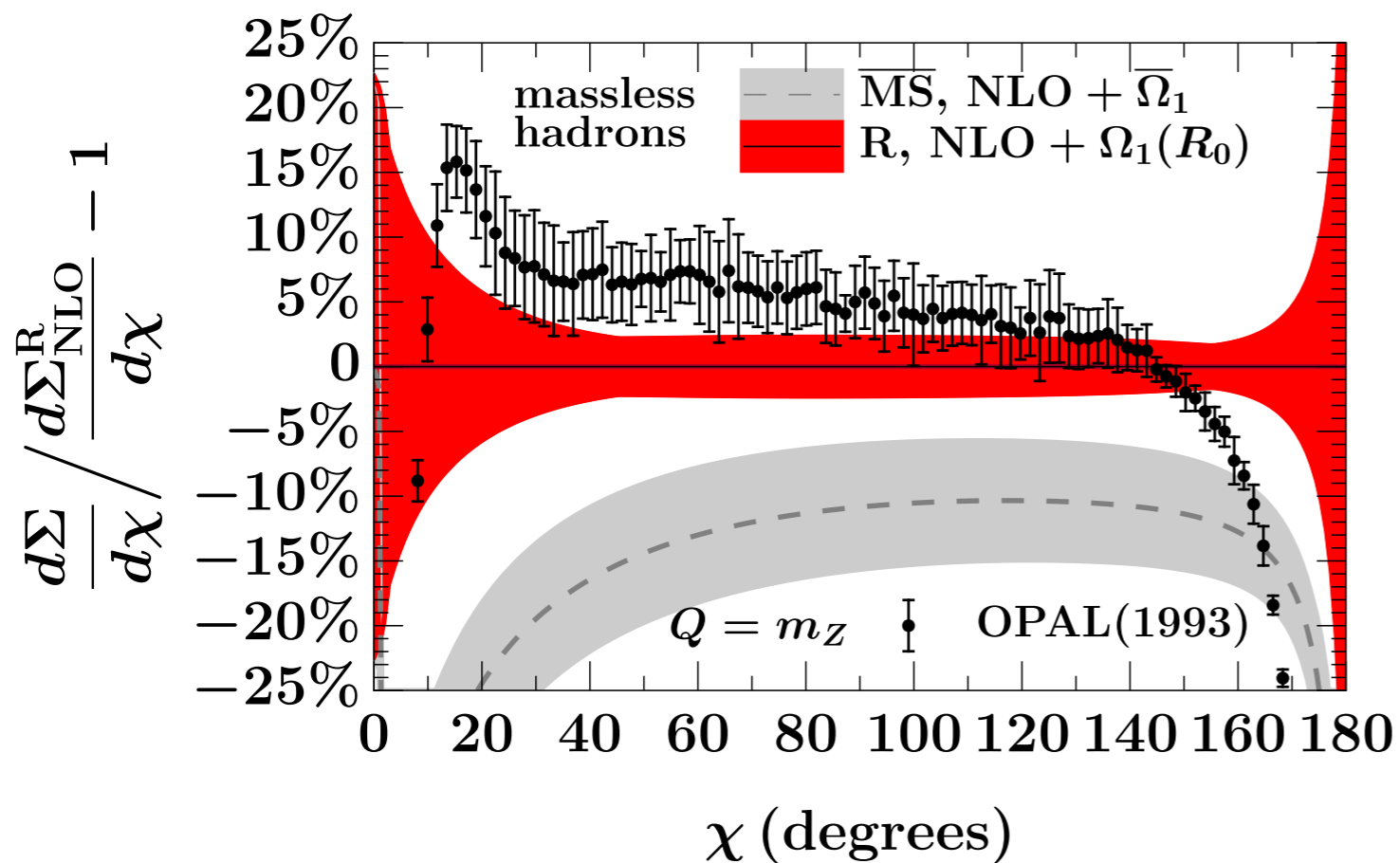
- improved convergence in R scheme (vs. $\overline{\text{MS}}$ scheme)
- smaller perturbative uncertainty

Including Leading Nonperturbative Correction:

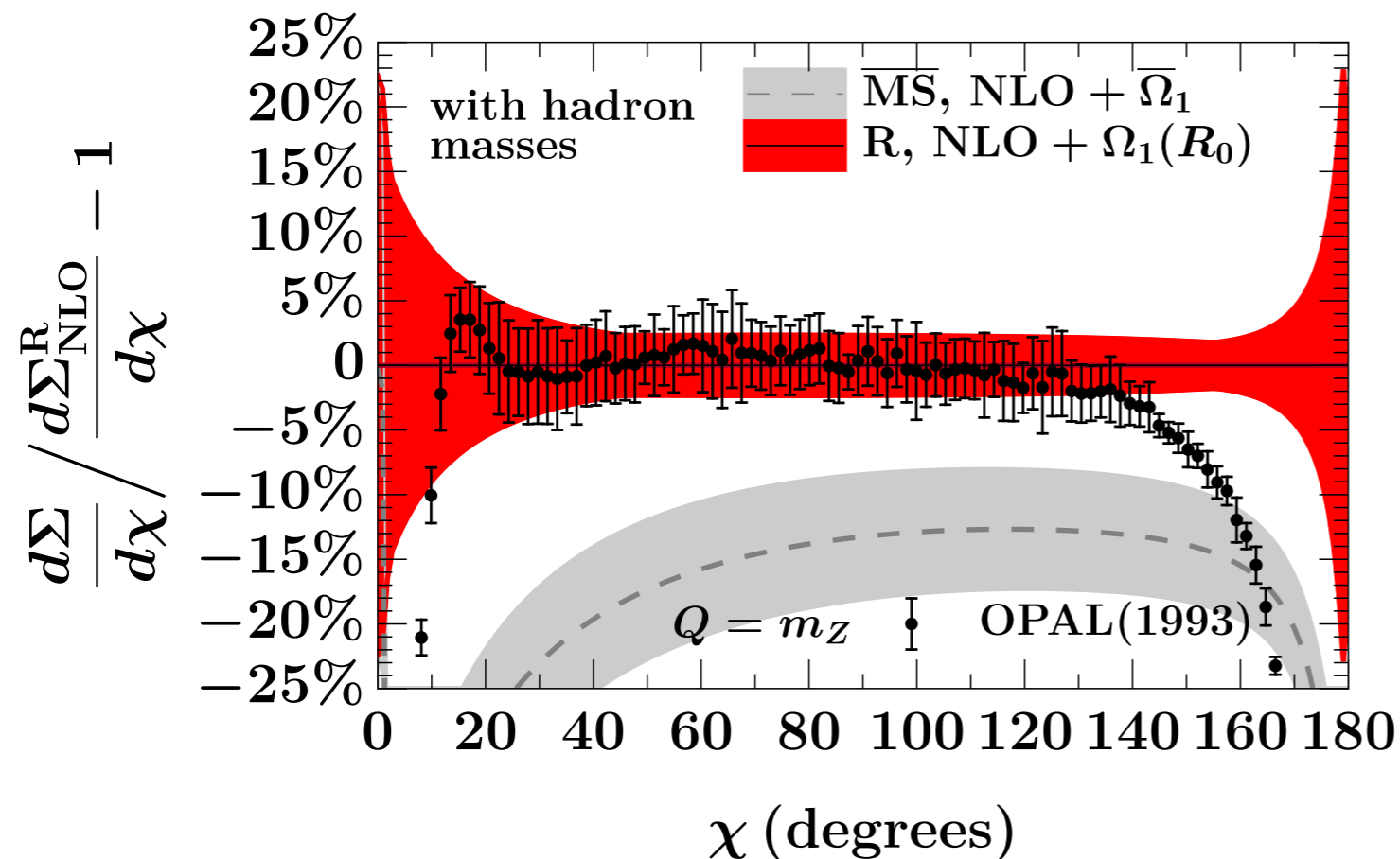
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- no fit parameters!
- model independent
- good agreement with data



- with thrust parameters (assuming massless hadrons)



- include +20% hadron mass correction to Ω_1
- better agreement