

Workshop on Muon Precision Physics

Strong2020 WorkStop/ThinkStart in June 2023 @ UZH

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LIVERPOOL / ZOOM 08 Nov 2022

- this is not a science talk, but information on an ongoing activity
- idea: make a next step in

Radiative corrections and Monte Carlo tools for low-energy hadronic cross sections in e^+e^- collisions

- WorkStop/ThinkStart **5 – 7 June 2023 UZH**: specialised and detailed, small scale
- Conference **8 – 9 June 2023 UZH**: more general and overview, larger scale
- inspired by [\[0912.0749\]](#)

Eur. Phys. J. C (2010) 66: 585–686
DOI 10.1140/epjc/s10052-010-1251-4

THE EUROPEAN
PHYSICAL JOURNAL C

Review

**Quest for precision in hadronic cross sections at low energy:
Monte Carlo tools vs. experimental data**

Working Group on Radiative Corrections and Monte Carlo Generators for Low Energies

- consolidate and implement the progress since 2010

- well-defined rather narrow scientific topic
- several groups working on various aspects of this topic
- collect a team of about 20 – 30 scientists as 'delegates'
- team starts preparations of questions to be scrutinised
- team meets for a few days, is locked in a room and key thrown away
- a set of 'homeworks' is defined to be completed over the coming months
- several months (or a year) later, a common paper appears
additional collaborators / authors welcome !

UZH 13–16 Sep 2016 [1705.01827]

Eur. Phys. J. C (2017) 77:471
DOI 10.1140/epjc/s10052-017-5023-2

THE EUROPEAN
PHYSICAL JOURNAL C  CrossMark

Regular Article - Theoretical Physics

To d , or not to d : recent developments and comparisons of regularization schemes

C. Gnendiger^{1,8}, A. Signer^{1,2}, D. Stöckinger³, A. Broggio⁴, A. L. Cherchiglia⁵, F. Driencourt-Mangin⁶, A. R. Fazio⁷, B. Hiller⁸, P. Mastrolia^{9,10}, T. Peraro¹¹, R. Pittau¹², G. M. Pruna¹, G. Rodrigo⁹, M. Sampaio¹³, G. Sborlini^{6,14,15}, W. J. Torres Bobadilla^{6,9,10}, F. Tramontano^{16,17}, Y. Ulrich^{1,2}, A. Visconti^{1,2}


Florence 4–6 Nov 2019 [2012.02567]

Eur. Phys. J. C (2021) 81:250
https://doi.org/10.1140/epjc/s10052-021-08996-y

THE EUROPEAN
PHYSICAL JOURNAL C 

Review

May the four be with you: novel IR-subtraction methods to tackle NNLO calculations

W. J. Torres Bobadilla^{1,2,8} , G. F. R. Sborlini³, P. Banerjee⁴, S. Catani⁵, A. L. Cherchiglia⁶, L. Cieri⁵, P. K. Dhani^{5,7}, F. Driencourt-Mangin², T. Engel^{4,8}, G. Ferrera⁹, C. Gnendiger⁴, R. J. Hernández-Pinto¹⁰, B. Hiller¹¹, G. Pelliccioli¹², J. Pires¹³, R. Pittau¹⁴, M. Rocco¹⁵, G. Rodrigo⁹, M. Sampaio⁶, A. Signer^{4,8}, C. Signorile-Signorile^{16,17}, D. Stöckinger¹⁸, F. Tramontano¹⁹, Y. Ulrich^{4,8,20}

UZH 4–7 Feb 2019 [2004.13663]

Eur. Phys. J. C (2020) 80:591
https://doi.org/10.1140/epjc/s10052-020-8138-9

THE EUROPEAN
PHYSICAL JOURNAL C 

Review

Theory for muon-electron scattering @ 10 ppm

A report of the MUonE theory initiative

P. Banerjee¹, C. M. Carloni Calame², M. Chiesa³, S. Di Vita⁴, T. Engel^{1,5}, M. Fael⁶, S. Laporta^{7,8}, P. Mastrolia^{7,8}, G. Montagna^{2,9}, O. Nicrosini², G. Ossola¹⁰, M. Passera⁸, F. Piccinini², A. Primo⁵, J. Ronca¹¹, A. Signer^{1,5,8}, W. J. Torres Bobadilla¹¹, L. Trentadue^{12,13}, Y. Ulrich^{1,5}, G. Venanzoni¹⁴

Durham 3–5 Aug 2022

N³LO kick-off WorkStop/ThinkStart

<https://conference.ippp.dur.ac.uk/event/1104/>

Team: A. Broggio, C. Carloni Calame, G. Colangelo, T. Engel, M. Fael, M. Hoferichter, B. Kubis, A. Kupsc, F. Lange, P. Mastrolia, G. Montagna, F. Piccinini, A. Price, M. Rocco, J. Ruiz de Elvira, K. Schönwald, M. Schönherr, O. Shekhovtsova, A. Signer, G. Stagnitto, P. Stoffer, T. Teubner, W. Torres Bobadilla, Y. Ulrich, G. Venanzoni

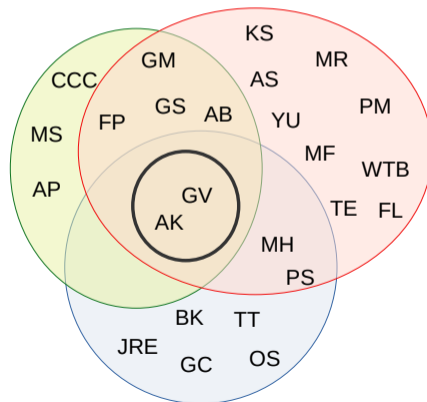
WP1: QED for leptons at NNLO

WP2: Form factor contributions at N³LO

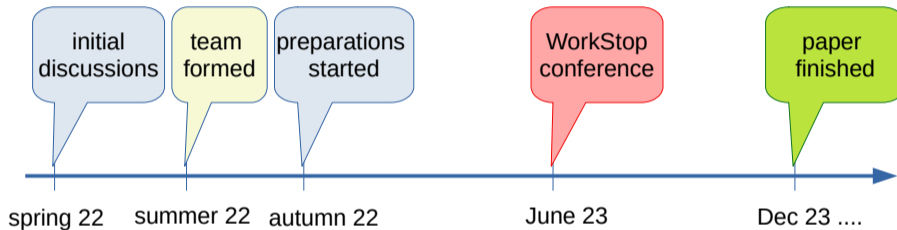
WP3: Processes with hadrons

WP4: Parton showers

WP5: Experimental input



Timeline



input / contributions most welcome

if you want to join (this means **work** !), please contact team members