

ALLEGATO B

UNIVERSITÀ DEGLI STUDI DI MILANO

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Matteo Fael CURRICULUM VITAE

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	FAEL
NOME	MATTEO
DATA DI NASCITA	[11, 08, 1986]

**INSERIRE IL PROPRIO CURRICULUM
(non eccedente le 30 pagine)**

Formazione Scientifica

- 01/11–03/14 **Dottorato di Ricerca in Fisica**,
Università degli Studi di Padova (I) & Universität Zurich (CH),
Tesi in cotutela: “*Electromagnetic dipole moments of fermions*”,
Supervisors **Dr. Massimo Passera**, **Prof. Thomas Gehrmann**.
- 09/08–10/10 **Laurea Magistrale in Fisica**,
Università degli Studi di Padova (I) ,
Tesi: “*Studio del momento magnetico del leptone tau nei suoi decadimenti radiativi leptonici*”,
Supervisor **Dr. Massimo Passera**.
Voto 110/110 e Lode
- 09/05–09/08 **Laurea in Fisica**,
Università degli Studi di Padova (I) ,
Tesi: “*Equazione di Korteweg-de Vries in presenza di fondale variabile*”,
Supervisor **Prof. Giancarlo Benettin**.
Voto 106/110

Interessi di Ricerca

- Fisica del quark bottom e charm
- Teorie di campo effettive nel e oltre il Modello Standard
- Calcoli perturbativi di QCD applicati alla fisica dei quark pesanti
- Fisica di precisione con i leptoni carichi.

Premi e Riconoscimenti

- Physics Letters B, “Most Valued Reviewer” Prize 2018 (Ed. G. Giudice)
- 2nd Conference on Charged Lepton Flavor Violation 2016, Best Theory Poster.

Attività di Ricerca

- 10/19–Oggi **Postdoc**, Karlsruhe Institute of Technology,
Insitute for Theoretical Particle Physics (TTP) Karlsruhe (D).
- 09/19 **Visiting fellow**, Institute of Nuclear Theory (INT),
University of Washington, Seattle (USA).
- 11/17–09/19 **Postdoc**, Universität Siegen,
Theoretical Particle Physics Group, Siegen (D).
- 10/14–10/17 **Postdoc**, Universität Bern,
Albert Einstein Center for Fundamental Physics, Bern (CH).

Attività Didattica

- 09/20–02/21 **Esercitatore (Teaching Assistant)**,
Quantum Mechanics 2, Docente Prof. M. Steinhauser.
Karlsruhe Institute for Technology
- 03/20–07/20 **Esercitatore (Teaching Assistant)**,
Theoretical Particle Physics I, Docente Prof. U. Nierste.
Karlsruhe Institute for Technology

- 09/18–02/19 **Esercitatore (Teaching Assistant)**,
Theoretical Particle Physics II, Docente Dr. O. Cata.
Universität Siegen
- 09/12–12/12 **Esercitatore (Teaching Assistant)**,
Quantum Field Theory III, Docente Prof. T. Gehrmann.
Universität Zurich
- 01/12–06/12 **Esercitatore (Teaching Assistant)**,
Quantum Field Theory II, Docente Prof. T. Gehrmann.
Universität Zurich

Supervisione di Studenti

- 2020 Co-supervisione dello studente M. Egner,
Karlsruhe Institute of Technology
- 2018-2019 Co-supervisione dello studente di dottorato P. Blackstone,
Indiana University (USA)
- 2018 Co-supervisione dello studente M. Diab,
Universität Siegen
- 2014-2017 Co-supervisione dello studente di dottorato J. Aebischer,
Universität Bern

Pubblicazioni

Preprint

M. Fael, K. Schönwald, M. Steinhasuer,
Third order corrections to the semi-leptonic $b \rightarrow c$ and the muon decays,
arXiv: 2011.13654.

Articoli in Rivista

- [1] M. Fael, K. Schönwald, M. Steinhasuer,
On the relation between the $\overline{\text{MS}}$ and the kinetic mass of heavy quarks,
Phys.Rev.D 103 (2021) 014005 [arXiv: 2011.11655].
- [2] M. Fael, K. Schönwald, M. Steinhasuer,
Exact results for Z_m^{OS} and Z_2^{OS} with two mass scales and up to three loops,
JHEP 2010 (2020) 087 [arXiv: 2008.01102 [hep-ph]].
- [3] M. Fael, K. Schönwald, M. Steinhasuer,
Kinetic Heavy Quark Mass to Three Loops,
Phys. Rev. Lett. 125 (2020) 052003 [arXiv: 2005.06487 [hep-ph]].
- [4] P. Banerjee, C. Carloni Calame, M. Chiesa, S. Di Vita, T. Engel, M. Fael, S. Laporta,
P. Mastrolia, G. Montagna, O. Nicrosini, G. Ossola, M. Passera, F. Piccinini, A. Primo,
J. Ronca, A. Signer, W. Torres Bobadilla, L. Trentadue, Y. Ulrich and G. Venanzoni,
Theory for muon-electron scattering at 10ppm: A report of the MUonE theory initiative,
Eur. Phys. J. C **80** (2020) 591 [arXiv:2004.13663 [hep-ph]].
- [5] P. Blackston, M. Fael, E. Passemar,
 $\tau \rightarrow \mu\mu\mu$ at a rate of one out of 10^{14} tau decays?,
Eur. Phys. J. C **80** (2020) 506 [arXiv:1912.09862 [hep-ph]].

- [6] M. Fael, T. Mannel, K. K. Vos,
The heavy quark expansion for inclusive semileptonic charm decays revisited,
JHEP 1912 (2019) 067 [arXiv:1910.05234 [hep-ph]].
- [7] M. Fael, M. Passera,
“Muon-electron scattering at NNLO: the hadronic corrections,”
Phys. Rev. Lett. 122 (2019) 192001 [arXiv:1901.03106 [hep-ph]].
- [8] M. Fael, T. Mannel, K. K. Vos,
“ V_{cb} determination from inclusive $b \rightarrow c$ decays: an alternative method,”
JHEP 1902 (2019) 177 [arXiv:1812.07472 [hep-ph]].
- [9] M. Fael,
“Hadronic corrections to μ -e scattering at NNLO with space-like data,”
JHEP 1902 (2019) 027 [arXiv:1808.08233 [hep-ph]].
- [10] M. Fael, T. Mannel,
“On the decays $B \rightarrow K^{()} + \text{leptonium},$ ”*
Nucl.Phys. B 932 (2018) 370-384 [arXiv:1803.08880 [hep-ph]].
- [11] J. Aebischer, M. Fael, C. Greub, J. Virto,
“B physics Beyond the Standard Model at One Loop: Complete Renormalization Group Evolution below the Electroweak Scale,”
JHEP 1709 (2017) 158 [arXiv:1704.06639 [hep-ph]].
- [12] M. Fael, C. Greub,
“Next-to-leading prediction for the decay $\mu \rightarrow e (e^+ e^-) \nu \bar{\nu},$ ”
JHEP 1701 (2017) 084 [arXiv:1611.03726 [hep-ph]].
- [13] S. Eidelman, D. Epifanov, M. Fael, L. Mercolli and M. Passera,
“ τ dipole moments via radiative leptonic τ decays,” JHEP 1603 (2016) 140
[arXiv:1601.07987 [hep-ph]].
- [14] J. Aebischer, A. Crivellin, M. Fael and C. Greub,
“Matching of gauge invariant dimension-six operators for $b \rightarrow s$ and $b \rightarrow c$ transitions,”
JHEP 1605 (2016) 037 [arXiv:1512.02830 [hep-ph]].
- [15] M. Fael, L. Mercolli and M. Passera,
“Radiative μ and τ leptonic decays at NLO,”
JHEP 1507 (2015) 153 [arXiv:1506.03416 [hep-ph]].
- [16] M. Fael and M. Passera,
“Positronium contribution to the electron $g-2,$ ”
Phys. Rev. D 90 (2014) no.5, 056004 [arXiv:1402.1575 [hep-ph]].
- [17] M. Fael, L. Mercolli and M. Passera,
“W-propagator corrections to μ and τ leptonic decays,”
Phys. Rev. D 88 (2013) no.9, 093011 [arXiv:1310.1081 [hep-ph]].
- [18] M. Fael and T. Gehrmann,
“Probing top quark electromagnetic dipole moments in single-top-plus-photon production,” Phys. Rev. D 88 (2013) 033003 [arXiv:1307.1349 [hep-ph]].

Atti di Conferenze

- [1] Editors: J. Aebischer, M. Fael, A. Lenz, M. Spannowsky, J. Virto, *“Computing tools for the SMEFT,”* arXiv:1910.11003 [hep-ph].
- [2] M. Fael, *“NLO prediction for the decays $\tau \rightarrow \ell \ell' \ell' \nu \bar{\nu}$ and $\mu \rightarrow e e e \nu \bar{\nu},$ ”* SciPost Phys. Proc. 1 (2019) 009 [arXiv:1811.10965 [hep-ph]].

- [3] M. Fael, “ $b \rightarrow s\mu^+\mu^-$ and $b \rightarrow c\tau\nu$ in the SM EFT,” in “PSI/UZH Workshop: Impact of $B \rightarrow \mu^+\mu^-$ on New Physics Searches,” arXiv:1803.10097 [hep-ph].
- [4] J. Aebischer, A. Crivellin, M. Fael and C. Greub, “1-Loop Matching of gauge invariant dim-6 operators for B decays,” PoS BEAUTY 2016 (2016) 064 [arXiv:1606.02588 [hep-ph]].
- [5] M. Fael, “Radiative τ leptonic decays and the possibility to determine the τ dipole moments,” EPJ Web Conf. 118 (2016) 01012.
- [6] M. Fael, “Radiative μ and τ leptonic decays,” J.Univ.Sci.Tech.China 46 (2016) 383.
- [7] M. Fael and M. Passera, “Precision tests via radiative μ and τ leptonic decays,” PoS RADCOR 2015 (2015) 091, [arXiv:1602.00457 [hep-ph]].
- [8] M. Fael and M. Passera, “On the positronium contribution to the electron $g-2$,” arXiv:1412.7714.
- [9] M. Fael, L. Mercolli and M. Passera, “Towards a determination of the tau lepton dipole moments,” Nucl. Phys. Proc. Suppl. 253-255 (2014) 103 [arXiv:1301.5302 [hep-ph]].

Contributi a Report e Monografie

T. Aoyama, et al., *The anomalous magnetic moment of the muon in the Standard Model*, Phys.Rept. 887 (2020) 1 [arXiv: 2006.04822 [hep-ph]].

MUonE collaboration, “Letter of Intent: the MUonE project,” CERN-SPSC-2019-026 /SPSC-I-252. 05/06/2019

Tesi di Dottorato

M. Fael, “Electromagnetic dipole moments of fermions,” Ph.D. thesis, Università degli Studi di Padova, Italy & Universität Zurich, Switzerland, 2014, opac.nebis.ch/ediss/20142170.pdf.

Conferenze e Seminari

Relatore a conferenze

- 20–25/10/19 Talk: $\tau \rightarrow \mu\mu\mu$ at a rate of one out of 10^{14} tau decays?
PSI 2019, Paul Scherrer Institute, Switzerland, Oct. 20 - 25 2019
- 9–13/9/19 **Invited Talk:** Radiative corrections for MUonE.
3rd Plenary Workshop of the Muon $g-2$ Theory Initiative, Seattle, USA
- 12/8/19– **Invited Talk:** Heavy quark expansion for inclusive charm decays.
6/9/19 *INT program: heavy-quark physics and fundamental symmetries*, Seattle, USA
- 8–10/4/19 **Invited Talk:** V_{cb} dai decadimenti semileptonici inclusivi del B : un metodo alternativo. *Incontri di Fisica delle Alte Energie (IFAE 2019)*, Napoli
- 23–30/3/19 Talk: V_{cb} from inclusive $b \rightarrow c$ decays: an alternative method.
Rencontres de Moriond QCD, La Thuile
- 25–26/3/19 **Invited Talk:** Recent advances in NNLO hadronic calculations
1st MUonE Collaboration meeting at CERN, CERN
- 25/2–1/3/19 **Invited Talk:** Leptonic decays of the tau lepton. *12th International Workshop on e^+e^- collisions from Phi to Psi*, BINP Novosibirsk, Russia
- 4–7/2/19 Talk: To $R(s)$ or not to $R(s)$, that is the question: hadronic NNLO corrections to μ - e scattering. *Theory for muon-electron scattering at 10ppm*, Zurich

- 24–28/9/18 Talk: NLO prediction for the decays $\tau \rightarrow \ell\ell'\ell'\nu\bar{\nu}$ and $\mu \rightarrow eee\nu\bar{\nu}$.
The 15th International Workshop on Tau Lepton Physics, Amsterdam, Netherlands
- 21–25/5/18 Talk: Status of radiative and rare leptonic tau decays at NLO
Talk: Heavy quark expansion for inclusive charm decays
The 9th International Workshop on Charm Physics, BINP Novosibirsk, Russia
- 19–23/2/18 Talk: Hadronic NLO contributions to μ -e scattering.
The Evaluation of the Leading Hadronic Contribution to the Muon Anomalous Magnetic Moment, MITP Mainz, Germany
- 18–19/12/17 Talk: $b \rightarrow s\ell\ell$ and $b \rightarrow c\ell\nu$ in the SMEFT.
Impact of $B \rightarrow \mu\bar{\mu}$ on New Physics Searches, Paul Scherrer Institute, Switzerland
- 4–5/9/17 Talk: Preliminary considerations on hadronic contributions to mu-e scattering at NLO. *Muon-electron Scattering: Theory Kickoff Workshop*, Padova, Italy
- 5–9/6/17 Poster: B physics Beyond the Standard Model at One Loop: Complete Renormalization Group Evolution below the Electroweak Scale. *Flavour Physics and CP Violation (FPCP2017)*, Praga, Rep. Ceca
- 16–20/10/16 Talk: NLO prediction for $\mu \rightarrow e\gamma\nu\bar{\nu}$ and $\mu \rightarrow e(e^+e^-)\nu\bar{\nu}$ decays. *Physics of fundamental Symmetries and Interactions*, Paul Scherrer Institute, Switzerland
- 20–22/6/16 Poster: NLO correction to $\mu \rightarrow e\gamma\nu\bar{\nu}$ and $\mu \rightarrow e(e^+e^-)\nu\bar{\nu}$ decays. *2nd International Conference on Charged Lepton Flavor Violation*, UVA, Charlottesville, USA
- 23–26/9/15 Talk: Radiative tau leptonic decays. *10th International Workshop on e+e- collisions from Phi to Psi*, USTC, Hefei, China
- 10–12/9/15 **Invited Talk:** Radiative mu and tau leptonic decays and the possibility to determine the tau dipole moments. *Workshop on flavour changing and conserving processes 2015*, Anacapri
- 15–19/9/14 Talk: Towards a determination of the tau lepton dipole moments. *13th International Workshop on Tau Lepton Physics*, RWTH, Aachen
- 4–6/6/14 Talk: Positronium contribution to the electron g-2. *LHCPhenoNet Workshop on Particle Physics*, LPNHE/LPTHE, Parigi
- 13–15/10/13 **Invited Talk:** Towards a determination of the tau lepton dipole moments. *International Symposium on Lepton and Hadron Physics at Meson-Factories*, Messina
- 15–22/9/2013 Talk: Probing tau lepton electromagnetic dipole moments through its leptonic radiative decays *II WORKSHOP on tau lepton decays: hadronic currents from data of Belle and BaBar and new physics signatures at LHC*, IFJ PAN, Cracovia, Polonia
- 16–20/9/13 Talk: Probing top quark anomalous magnetic moment at LHC *LHCPhenoNet MidTerm Meeting*, Ravello
- 19–22/3/12 Talk: The anomalous magnetic moment of tau lepton and its leptonic radiative decays *LHCPhenoNet Annual Meeting*, Durham, UK
- [Seminari su invito](#)
- 19/11/2020 *The MUonE project*, University of Würzburg
- 18/08/2020 *Towards the ultimate precision in V_{cb}* , Università di Padova
- 11/07/2019 *Theory for μ -e scattering at 10 ppm*, Humboldt Universität zu Berlin
- 25/06/2020 *Theory for μ -e scattering at 10 ppm*, Karlsruhe Institute of Technology
- 19/12/2018 *V_{cb} from inclusive $b \rightarrow c\ell\nu$ decays: an alternative method*, Los Alamos National Lab (USA)

- 5/12/2018 *V_{cb} from inclusive $b \rightarrow c\ell\nu$ decays: an alternative method*, Università di Padova
 10/7/2017 *SMEFT for B physics*, Universität Siegen
 14/12/2015 *Positronium contribution to the electron g-2*, EPFL Lausanne
 5/12/2013 *Probing top quark electromagnetic dipole moments in single-top-plus-photon*, Cross collider Talks, CERN

Journal Club

- 25/11/2020 *A north-west passage for semileptonic B decays*, Karlsruhe Institute of Technology
 27/11/2019 *Taming higher $1/m_b$ corrections in $B \rightarrow X_c\ell\bar{\nu}$ with reparametrization invariance*, Karlsruhe Institute of Technology
 12/10/2017 *Hadronic contributions to μ -e scattering at NLO*, Universität Bern
 10/3/2016 *Precision test via radiative tau decays*, Universität Bern
 9/10/2014 *Positronium contribution to the electron g-2*, Universität Bern

Organizzazione di Conferenze e Workshop

- Marzo 2020 Organizzazione dei seminari
 del Theoretical Particle Physics Insititue del KIT Karlsruhe
 26/10/2020 Workshop on heavy quark masses, KIT Karlsruhe.
 12/6/2019–14/6/2019 Workshop SMEFT-Tools 2019, IPPP Durham, UK.

Altre Attività

Referee per le riviste

- *European Physical Journal C (EPJC)* da Sett. 2019
- *Physics Review Letters (PRL)* da Ago. 2019
- *Physics Letters B (PLB)* da Dic. 2016
- *Physical Review D (PRD)* da Giu. 2016
- *Journal of High Energy Physics (JHEP)* da Lug. 2013

Divulgazione Scientifica

- 17/4/2019 Masterclass *Primo viaggio nel mondo delle particelle elementari*
 Liceo “J. Da Ponte”, Bassano del Grappa
 14/3/2018 Masterclass *Primo viaggio nel mondo della meccanica quantistica*
 Liceo “G.B. Brocchi”, Bassano del Grappa
 12/3/2018 Masterclass *Primo viaggio nel mondo della meccanica quantistica*
 Liceo “G.B. Brocchi”, Bassano del Grappa
 17/2/2017 Masterclass *Primo viaggio nel mondo della meccanica quantistica*
 Liceo “G.B. Brocchi”, Bassano del Grappa
 12/2/2016 Masterclass *Primo viaggio nel mondo della meccanica quantistica*
 Liceo “G.B. Brocchi”, Bassano del Grappa

Lingue

- **Italiano:** madre lingua
- **Inglese:** C1
- **Tedesco:** B1
- **Francese:** A2

Referenze

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