Tyler Corbett – Curriculum Vitae

Postdoctoral Fellow
Department of Physics
Universität Wien
Boltzmanngasse 8
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Research Interests – Indirect evidence of physics beyond the Standard Model, precision calculations in the Standard Model and Standard Model Effective Field Theory, collider physics and future colliders, Higgs and electroweak physics, B-anomalies and flavor physics.

Education & Affiliations

Postdoctoral Fellow — Fall 2022 – Present
Universität Wien

Postdoctoral and Marie Curie Fellow — Fall 2018 – Summer 2022
Niels Bohr Institute, University of Copenhagen

Postdoctoral Fellow — Fall 2015 – Summer 2018
ARC CoEPP, Melbourne University

Doctor of Philosophy, Physics — Summer 2015
YITP, Stony Brook University, Dissertation: Effective Lagrangians for Higgs Physics

Recent and Selected Publications

29 publications, 1,391 citations from peer reviewed articles (3,538 from citeable), h-index of 17 (19).
2 single author, 20% with students mentored.

T. Corbett, A. Martin, M. Trott.
Consistent higher order $\sigma(G\,G \to h)$, $\Gamma(h \to \mathcal{G}\,\mathcal{G})$ and $\Gamma(h \to \gamma\gamma)$ in geoSMEFT
JHEP 12 (2021) 147, [arXiv:2107.07470]

T. Corbett.
The one-loop tadpole in the geoSMEFT
SciPost Phys. 11 (2021) 097, [arXiv:2106.10284]

T. Corbett.
The Feynman Rules for the SMEFT in the Background Field Gauge
JHEP 03 (2021) 001, [arXiv:2010.15852]

T. Corbett, O. J. P. Éboli, J. Gonzalez-Fraile, and M. Gonzalez-Garcia.
Determining Triple Gauge Boson Couplings from Higgs Data,
Phys.Rev.Lett. 111 (2013), no. 1 011801, [arXiv:1304.1151].

T. Corbett, O. J. P. Éboli, J. Gonzalez-Fraile, and M. Gonzalez-Garcia.
Constraining anomalous Higgs interactions,
Phys.Rev. D86 (2012) 075013, [arXiv:1207.1344].

Grants & Awards

Total awarded: ∼680k€∼$760k

La Caixa Postdoctoral Junior Leader (declined for 6 yr position at U. Vienna) 300k€∼$330k 2022

'Investigador Distinguido', Consellería De Educación, Galicia, (declined for MCIF) 160k€∼$190k 2020

Marie Curie Individual Fellowship, 207k€∼$225k 2020

Joint DAAD–Universities Australia Research Cooperation Scheme Grant, 15k AUD∼ 9k€∼$10k 2017
for six week stay at Universität Heidelberg
and to bring an student from Heidelberg to Melbourne University for six weeks

Betty Laby traveling scholarship for Early Career Researchers, 5k AUD∼3k€∼$3.3k 2016

Dresden Prize – *"for outstanding theoretical thesis"* 2015

Peter B. Khan Fellowship (Award) 2014

David Fox Prize – *"for outstanding teaching"* 2011

Hal W. Metzger Award in Astronomy 2010

Students Supervised

Jay Desai, PhD Student, YITP Stony Brook University, 2022–2023

Thor Rasmussen, Masters Student Niels Bohr Institute, University of Copenhagen, Primary Supervisor 2020–2021

Andreas Helset, PhD Student Niels Bohr Institute, University of Copenhagen 2019–2020

Maeve Madigan, PhD student Cambridge University 2018–2019

Anke Biekötter, PhD student Universität Heidelberg (Now Postdoc at Durham University) 2017–2018

Michael Nee, Masters student at Melbourne University (Now PhD at Oxford University) 2017–2018

Haolin Lee, PhD student at UMass Amherst (Now Postdoc Beijing ITP) 2016–2017

Professional Activities

Seminar organizer, Universität Wien, Particle physics group 2022–present

Referee, Physical Review D & letters 2019–present

Referee, European Physical Journal Plus 2022–present

Organizer Higgs Effective Field Theories (HEFT) 2020, 2021

VBScan, Management Committee Contact for Denmark Spring 2019–2022

SUSY Conference, support Spring 2016

Teaching

Modern Methods in Particle Physics (future, notes in preparation), Fall 2023
Master's course, introductory QFT, loop calculations, with an emphasis on EFTs

Discussion group leader, European School of High Energy Physics, Summer 2023
Lead discussions of theory topics in HEP with experimental students

Analysis II Exercise Group (Tutorial/Recitation, Bachelor's level) Spring 2023
Multivariable calculus

Modern Methods in Particle Physics, Fall 2022
Master's course, covering the SM, EFTs, and SMEFT

Advanced Quantum Mechanics Exercise Group (Tutorial/Recitation, Master's level) Fall 2022

Lectures on EFTs, DKPI School Spring 2022
Covering EFT basics, Chiral Perturbation Theory, the SMEFT

Primary Supervisor Master's Student, Thor Rasmussen 2020

Teaching (continued)

Advanced Graduate Seminar, University of Melbourne, Introduction to Renormalization and Loop Calculations	Springs 2018, 2017, 2016
Directed Graduate Study Group, "QCD and Collider Physics"	Winter 2015-16
PHY 505 Electricity and Magnetism I, Grader	Spring 2012
PHY 515 Graduate Laboratory	Spring 2012
PHY 511 Quantum Mechanics I, Grader	Fall 2011
PHY 133 Classical Physics Laboratory	Fall 2011
PHY 252 Modern Physics Laboratory	Fall 2010, Spring 2011

Outreach

Science Communication training at the University of Vienna	Fall 2023
Support of students at European School of High Energy Physics for Outreach Project (Students won the competition at the school)	Summer 2023
Outreach training by "Inside Edge" at European School of High Energy Physics	Summer 2023
Introduction to research groups, U Wien, Theoretical Particle Physics Introduction Seminar, History and basics of the SM and BSM physics	Spring 2023
High School Student Camp, University of Melbourne Equity and Innovation grant Organizational role	Fall 2017
Work Experience Week Organizational role	Spring 2017
Work Experience Week Seminar on Particle Physics, Discussion sessions with students	Spring 2016

Conferences Attended

Les Rencontres de Physique de la Vallée d'Aoste, La Thuile, Italy	Winter 2023
HEFT, Granada	Summer 2022
European Physical Society Conference on High Energy Physics, remote	Summer 2021
HEFT, China, remote	Spring 2021
Tools 2020, remote	Fall 2020
HEFT, Louvain la Neuve, Belgium	Spring 2019
PASCOS 2017, Madrid, Spain	Summer 2017
Invisibles Workshop 2017, Zürich, Switzerland	Summer 2017
CoEPP Annual Workshop, Adelaide, Australia	Winter 2017
HEFT, Niels Bohr Institute, Copenhagen, Denmark	Fall 2016
SM @ LHC, Pittsburgh, PA, USA	Spring 2016
CoEPP Annual Workshop, Torquay, Australia	Winter 2016
DPF 2015, Ann Arbor, Michigan	Summer 2015
Invisibles Workshop 2015: "Invisibles Meets Visibles", Madrid, Spain	Summer 2015
Invisibles Workshop 2014, Paris, France	Summer 2014
Phenomenology 2014 Symposium, Pittsburgh, PA, USA	Spring 2014
CPAN 2012, Granada, Spain	Fall 2014

Academic Stays

Dep ECM, Universitat de Barcelona	3wks, October 2021
Institute fur Theoretische Physik, Universität Heidelberg	6 wks, Spring 2018
IFIC, Universitat de València	1 wk, October 2017
Dep ECM, Universitat de Barcelona	1 wk, October 2017
Institute fur Theoretische Physik, Universität Heidelberg	1 wk, October 2017
Institute fur Theoretische Physik, Universität Heidelberg	1 wk, November 2016
Dep ECM, Universitat de Barcelona	1wk, October 2016
University of Massachusetts, Amherst	2 wks, October 2016
Institute fur Theoretische Physik, Universität Heidelberg	1 wk, November 2014
Dep ECM, Universitat de Barcelona	4 wks, October-November 2014
Institute fur Theoretische Physik, Universität Heidelberg	1 wk, December 2013
Dep ECM, Universitat de Barcelona	4 wks, November 2013
Dep ECM, Universitat de Barcelona	4 wks, November 2012

Seminars & Talks

Geometry of the SMEFT — Winter 2023
Invited talk, Les Rencontres de Physique de la Vallée d'Aoste, La Thuile

Effective Field Theories for BSM Physics — Winter 2023
Invited talk, FAKT workshop

Rambling about $1/\Lambda^4$ — Summer 2022
Closing Talk, HEFT

geoSMEFT and some applications — Fall 2021–Spring 2022
Seminar, IFT Madrid, IFIC Valencia, Universität Wien, Edinburgh University, Stony Brook University

geoSMEFT and an application — Summer 2021
Talk, European Physics Society Conference on High Energy Physics

Effective Field Theories and Neutrinos — Summer 2021
Invited Lecture, International Summer School on Neutrinos, NBI

The SMEFT and its precision future — Spring 2021
Invited talk, 1st FCC Nordic conference

Feynrules for the SMEFT in the background field gauge — Fall 2020
Tools 2020 conference

The Higgs Width in the SMEFT — Spring 2020
Invited talk, Spaatind conference, Norway

Precision in the SMEFT: the Higgs and Electroweak Sectors — Fall 2019
Seminar, Brookhaven National Laboratory, Pittsburgh University, Yale University, University of Massachusetts, Amherst

The Higgs Width in the SMEFT — Spring 2019
Invited Talk HEFT workshop, Invited Seminar Cambridge University

Matter vs Antimatter & the Baryon Asymmetry of the Universe — Fall 2018
N Talk, Niels Bohr Institute, Copenhagen University

Extended Scalar Sectors, Higgs EFTs, and the Study of DiHiggs Production — Fall 2017
IFIC University of Valencia, University of Heidelberg, University of Glasgow IPPP, University of Durham, University of Melbourne, Monash University

Seminars & Talks (continued)

Inverse Amplitude Method: The Singlet Higgs Portal as a Study Case Fall 2016
Invited Seminar, Institute fur Theoretische Physik, Universität Heidelberg

Higgs Session – EFT LO and NLO Techniques Spring 2016
Plenary Talk, SM@LHC 2016

Effective Lagrangians for Higgs Physics Winter 2016
Plenary Talk, CoEPP Annual Workshop 2016

Basics of Effective Field Theories Fall 2015
Informal Seminar, ARC CoEPP Melbourne University

Effective Lagrangians for Higgs Physics Summer 2015
Parallel Session, DPF Meeting 2015

Unitarity Constraints on Dimension-Six Operators Summer 2015
PhD Session, Invisibles Workshop 2015: "Invisibles Meets Visibles"

Effective Lagrangians for Higgs Physics Spring 2014
Parallel Session, Phenomenology 2014 Symposium, University of Pittsburgh

Basic Parallel Computing with OpenMPI Fall 2013
Informal Seminar, YITP Student Journal Club, Stony Brook University

The Standard Model and the Higgs Mechanism Spring 2013
Informal Seminar, Alfred University

Empirical Determination of the Higgs Couplings Spring 2013
Seminar, YITP Phenomenology, Stony Brook University

Confronting New Physics with Data from the LHC and Neutrino Experiments Spring 2012
Seminar, Stony Brook University

Computing Proficiencies

Developer of Feynrules package: SMEFT in background field formalism

Mathematica, FeynRules, FeynArts, FormCalc, FeynCalc, LoopTools

MadGraph, Pythia, Delphes, Root

C++, Fortran, Integration of Fortran and OpenMPI for parallelized computing

Schools Attended

European School of High Energy Physics Fall 2023

Introduction to HPC using Spartan Summer 2016
Melbourne, Australia *A workshop on HP computing using the cluster Spartan.*

Invisibles School 2015 Summer 2015
Madrid, Spain

Journeys Through the Precision Frontier: Amplitudes for Colliders Summer 2014
Theoretical Advanced Study Institute (TASI), Boulder, Colorado

Invisibles School 2014 Summer 2014
Gif-Sur-Yvette, France

Languages

English, native
Spanish, low-conversational
Danish, B1
German, A1
French, basic

References

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(references requested from and sent by A. Stagg)

Last updated October 4, 2023