

# TYLER CORBETT – CURRICULUM VITAE

## Postdoctoral Fellow

Universität Wien

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Professional webpage: <https://tscorbett.github.io/>

Spires publication list: <https://inspirehep.net/authors/1259777?ui-citation-summary=true>

**RESEARCH INTERESTS** – Indirect evidence of physics beyond the Standard Model, precision calculations in the Standard Model and Standard Model Effective Field Theory, geometry of effective field theories, collider physics and future colliders, Higgs and electroweak 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

30 publications, 1,553 citations from peer reviewed articles (3,970 from citeable), h-index of 18 (21).

3 single author, 40% with students mentored, average 3.3 authors/paper.

T. Corbett.

*Top-down and bottom-up: Studying the SMEFT beyond leading order in  $1/\Lambda^2$*

Under review SciPost, [arXiv:2405.04570]

T. Corbett, A. Martin, M. Trott.

*Consistent higher order  $\sigma(GG \rightarrow h)$ ,  $\Gamma(h \rightarrow \mathcal{G}\mathcal{G})$  and  $\Gamma(h \rightarrow \gamma\gamma)$  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
<i>for six week stay at Universität Heidelberg</i>		
<i>and to bring an student from Heidelberg to Melbourne University for six weeks</i>		
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**

Christopher Berger, Master’s student U Vienna,		2024–present
Primary Supervisor		
Jay Desai, PhD Student, YITP Stony Brook University,		2022–present
Thor Rasmussen, Masters Student Niels Bohr Institute, University of Copenhagen,		2020–2021
Primary Supervisor		
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
VBSscan, Management Committee Contact for Denmark		Spring 2019–2022
SUSY Conference, support		Spring 2016

**TEACHING**

Analysis II Exercise group (Tutorial/Recitation, Bachelor’s level)		Spring 2024
Multivariable calculus		
Modern Methods in Particle Physics, (Lecture notes here)		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		

**TEACHING (CONTINUED)**

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	
Advanced Graduate Seminar, University of Melbourne,	Springs 2018, 2017, 2016
Introduction to Renormalization and Loop Calculations	
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**

<i>HEFT</i> , Bologna, Italy (upcoming)	Summer 2024
<i>Les Rencontres de Physique de la Vallée d'Aoste</i> , La Thuile, Italy	Winter 2023
<i>HEFT</i> , Granada	Summer 2022
<i>European Physical Society Conference on High Energy Physics</i> , remote	Summer 2021
<i>HEFT</i> , China, remote	Spring 2021
<i>Tools 2020</i> , remote	Fall 2020
<i>HEFT</i> , Louvain la Neuve, Belgium	Spring 2019
<i>PASCOS 2017</i> , Madrid, Spain	Summer 2017
<i>Invisibles Workshop 2017</i> , Zürich, Switzerland	Summer 2017
<i>CoEPP Annual Workshop</i> , Adelaide, Australia	Winter 2017
<i>HEFT</i> , Niels Bohr Institute, Copenhagen, Denmark	Fall 2016
<i>SM @ LHC</i> , Pittsburgh, PA, USA	Spring 2016
<i>CoEPP Annual Workshop</i> , Torquay, Australia	Winter 2016
<i>DPF 2015</i> , Ann Arbor, Michigan	Summer 2015
<i>Invisibles Workshop 2015: "Invisibles Meets Visibles"</i> , Madrid, Spain	Summer 2015
<i>Invisibles Workshop 2014</i> , Paris, France	Summer 2014
<i>Phenomenology 2014 Symposium</i> , Pittsburgh, PA, USA	Spring 2014
<i>CPAN 2012</i> , Granada, Spain	Fall 2014

**ACADEMIC STAYS**

DESY theorist of the month	1 wk, February 2024
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**

<i>The SMEFT beyond leading order in <math>1/\Lambda^2</math></i>	Winter 2024
Theorist of the month invited talk, DESY	
<i>Geometry of the SMEFT</i>	Winter 2023
Invited talk, Les Rencontres de Physique de la Vallée d'Aoste, La Thuile	
<i>Effective Field Theories for BSM Physics</i>	Winter 2023
Invited talk, FAKT workshop	
<i>Rambling about <math>1/\Lambda^4</math></i>	Summer 2022
Closing Talk, HEFT	
<i>geoSMEFT and some applications</i>	Fall 2021–Spring 2022
Seminar, IFT Madrid, IFIC Valencia, Universität Wien, Edinburgh University, Stony Brook University	
<i>geoSMEFT and an application</i>	Summer 2021
Talk, European Physics Society Conference on High Energy Physics	
<i>Effective Field Theories and Neutrinos</i>	Summer 2021
Invited Lecture, International Summer School on Neutrinos, NBI	
<i>The SMEFT and its precision future</i>	Spring 2021
Invited talk, 1st FCC Nordic conference	
<i>Feynrules for the SMEFT in the background field gauge</i>	Fall 2020
Tools 2020 conference	
<i>The Higgs Width in the SMEFT</i>	Spring 2020
Invited talk, Spaatind conference, Norway	
<i>Precision in the SMEFT: the Higgs and Electroweak Sectors</i>	Fall 2019
Seminar, Brookhaven National Laboratory, Pittsburgh University, Yale University, University of Massachusetts, Amherst	
<i>The Higgs Width in the SMEFT</i>	Spring 2019
Invited Talk HEFT workshop, Invited Seminar Cambridge University	
<i>Matter vs Antimatter &amp; the Baryon Asymmetry of the Universe</i>	Fall 2018
N Talk, Niels Bohr Institute, Copenhagen University	
<i>Extended Scalar Sectors, Higgs EFTs, and the Study of DiHiggs Production</i>	Fall 2017
IFIC University of Valencia, University of Heidelberg, University of Glasgow IPPP, University of Durham, University of Melbourne, Monash University	

**SEMINARS & TALKS (CONTINUED)**

<i>Inverse Amplitude Method: The Singlet Higgs Portal as a Study Case</i>	Fall 2016
Invited Seminar, Institute für Theoretische Physik, Universität Heidelberg	
<i>Higgs Session – EFT LO and NLO Techniques</i>	Spring 2016
Plenary Talk, SM@LHC 2016	
<i>Effective Lagrangians for Higgs Physics</i>	Winter 2016
Plenary Talk, CoEPP Annual Workshop 2016	
<i>Basics of Effective Field Theories</i>	Fall 2015
Informal Seminar, ARC CoEPP Melbourne University	
<i>Effective Lagrangians for Higgs Physics</i>	Summer 2015
Parallel Session, DPF Meeting 2015	
<i>Unitarity Constraints on Dimension-Six Operators</i>	Summer 2015
PhD Session, Invisibles Workshop 2015: “Invisibles Meets Visibles”	
<i>Effective Lagrangians for Higgs Physics</i>	Spring 2014
Parallel Session, Phenomenology 2014 Symposium, University of Pittsburgh	
<i>Basic Parallel Computing with OpenMPI</i>	Fall 2013
Informal Seminar, YITP Student Journal Club, Stony Brook University	
<i>The Standard Model and the Higgs Mechanism</i>	Spring 2013
Informal Seminar, Alfred University	
<i>Empirical Determination of the Higgs Couplings</i>	Spring 2013
Seminar, YITP Phenomenology, Stony Brook University	
<i>Confronting New Physics with Data from the LHC and Neutrino Experiments</i>	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**

<i>European School of High Energy Physics</i>	Fall 2023
<i>Introduction to HPC using Spartan</i>	Summer 2016
Melbourne, Australia <i>A workshop on HP computing using the cluster Spartan.</i>	
<i>Invisibles School 2015</i>	Summer 2015
Madrid, Spain	
<i>Journeys Through the Precision Frontier: Amplitudes for Colliders</i>	Summer 2014
Theoretical Advanced Study Institute (TASI), Boulder, Colorado	
<i>Invisibles School 2014</i>	Summer 2014
Gif-Sur-Yvette, France	

**LANGUAGES**

English, native  
 Spanish, low-conversational  
 Danish, B1  
 German, A2  
 French, basic

**REFERENCES****M. C. Gonzalez Garcia**

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Professor, Universitat Barcelona  
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**Michael Trott**

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**Ben Allanach**

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(references requested from and sent by A. Stagg)