

# Curriculum Vitae

## Geoffrey JANSSENS

### PERSONAL DATA

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BIRTH DATE: 16 November, 1989, Belgium  
CITIZENSHIP: Belgian  
EMAIL: [geoffrey.janssens@vub.be](mailto:geoffrey.janssens@vub.be)  
MOTHER TONGUE: French, Dutch  
FLUENT: English, German

### EMPLOYMENT AND EDUCATION

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CURRENTLY Postdoctoral Researcher, Université Catholique de Louvain-La-Neuve  
Fellowship: Chargé de Recherche du Fond de la Recherche Scientifique (FNRS)  
Member of the research team of Prof. Dr. Pedro Vaz

10/2021- Senior Postdoctoral Research Fellow, VUB  
(on leave till 9/2024) Fellowship: Fonds voor Wetenschappelijk Onderzoek (FWO)  
Member of the research team of Prof. Dr. Kenny De Commer

3/2020 - 9/2020 Postdoctoral visiting researcher, Université de Paris  
Member of the research team 'Groupes, Représentations et Géométrie'  
working with Prof. Dr. Bernhard Keller.

6/2017-9/2021 Junior Postdoctoral Research Fellow, VUB  
Fellowship: Fonds voor Wetenschappelijk Onderzoek (FWO)

10/2014 - 5/2017 Ph.D. in Mathematics, Vrije Universiteit Brussel  
Title: Identities of Affine Algebras and their Asymptotic Behaviour  
Supervisor: Prof. Dr. Eric Jespers and Dr. Alexey Gordinenko  
Grant: Fonds voor Wetenschappelijk Onderzoek (FWO)

10/2012 - 9/2014 Teaching assistant, Mathematics Department VUB

9/2010 - 6/2012 Master in Fundamental Mathematics, Vrije Universiteit Brussel  
Grade: Grootste Onderscheiding  
Thesis: "The Isomorphism problem for Integral Group Rings"  
Supervisor: Prof. Dr. Eric Jespers

### SCIENTIFIC AWARDS

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2016-3 KWG prize  
*The prize is yearly awarded at the Dutch National Mathematical Congress for mathematical merits during the PhD and ability to make subject accessible to non-specialists.*

2018-11 Reinhold Baer prize  
*The prize is annually granted jointly by the association AGTA and publisher Aracne for outstanding PhD thesis in group theory and its applications. Received a special mention.*

## PUBLICATIONS AND PREPRINTS

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### Publications

- (1) G. Janssens, *Primitive Central Idempotents of Rational Group Algebras*, J. Algebra Appl. 12 (2013), no. 1, 125–130
- (2) A. Gordienko, G. Janssens,  *$\mathbb{Z}S_n$ -modules and polynomial identities with integer coefficients*, Int. J. Algebra Comput. 23 (2013), no. 8, 1925–1943
- (3) E. Aljadeff, G. Janssens, Y. Karasik, *The Polynomial Part of the Codimension Growth of Affine PI algebras*, Adv. Math. 309 (2017), 487–511.
- (4) A. Gordienko, G. Janssens, E. Jespers, *Semigroup graded algebras and graded PI-exponent*, Israel J. Math. 220 (2017), no.1, 387–452
- (5) G. Janssens, E. Jespers, D. Temmerman, *Free products in the unit group of the integral group ring of a finite group*, Proc. Amer. Math. Soc. 145 (2017), no. 7, 2771–2783
- (6) G. Janssens, *A Glimpse into the Asymptotics of Polynomial identities*, Nieuw Arch. Wiskd. (5) 18 (2017), no.1, 60–64
- (7) F. Eisele, G. Janssens, T. Raedschelders, *A reduction theorem for  $\tau$ -rigid modules*, Math. Z. 290 (2018), 3–4, 1377–1413
- (8) G. Janssens, *Codimension Growth of Lie algebras with a generalized action*, Proc. Amer. Math. Soc. 150 (2022), no. 7, 2741–2754
- (9) A. Bächle, G. Janssens, E. Jespers, A. Kiefer, D. Temmerman, *Higher modular groups as amalgamated products and a dichotomy for integral group rings*, J. Algebra 604 (2022), 185–223
- (10) A. Bächle, G. Janssens, E. Jespers, A. Kiefer, D. Temmerman, *Abelianization and fixed point properties of linear groups and units in integral group rings*, Math. Nachr. 296 (2023), no. 1, 8–56

### Preprints

- (11) F. Caenepeel, G. Janssens, *Glider Representation Rings with a view on distinguishing groups*, submitted (2020), 41 pp, arXiv:1911.11733
- (12) G. Janssens, F. Jespers, O. Schnabel, *Units of twisted group rings and their correlations to classical group rings*, submitted (2022), 39 pp, arXiv:1811.12184
- (13) G. Janssens, D. Temmerman, F. Thilmany *Constructing amalgams in semisimple linear groups and group rings*, available upon request (2022), 26 pp

## INVITED TALKS

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### Invited talks at conferences and workshops

- "Filtrations of Group representations : a glider perspective", *Second Antipode Workshop*, ULB, Brussels, 13 September 2022
- "The Subgroup Congruence Problem and its role in group rings", *GTA: Gran Bilbao, conference*, Bilbao, Spain, 28 February 2019
- "The integral isomorphism problem, a helping hand from (geometric) group theory", *AGTA Workshop - Reinhold Baer Prize*, Napoli, Italy, 5 November 2018
- "A Glimpse into the asymptotics of Polynomial identities", *Conference Groups, Rings and the Yang-Baxter equation*, Spa, Belgium, 20 June 2017

- "Abstracte groepen, meer dan gewoon abstracte objecten",  
*Nationale Wiskunde Dagen*, Noordwijkerhout, Netherlands, 4 February 2017
- "Identities of Algebras and Groups and their Asymptotic behaviour",  
*BeNeLux Mathematical Congress*, University of Amsterdam, Netherlands, 23 March 2016

#### Invited talks at seminars and summerschools

- "Comparing additive and monoidal categorification via Quantum Affine Algebras"  
*Seminar on quantum groups*, Université de Louvain-La-Neuve, 19 October 2022
- "A polynomial identity perspective on the classification of finite dimensional algebras",  
*Séminaire Algèbre et Topologie*, Université de Strassbourg, 11 October 2022
- "Des matrices qui communiquaient dans 2 langues étonnamment différentes (une histoire selon J. Tits)"  
*BSSM - Brussels Summer School Of Mathematics*, ULB, Brussels, 2 September 2022
- "On the Virtual Structure Problem for group rings",  
*Group Theory Seminar*, ICMAT, Madrid, 24 February 2022
- "Amalgamated Decompositions of Higher Modular Groups and their Elementary Part ",  
*Seminário de Álgebra*, University of Brasília, online, 9 April 2021
- "A reduction theorem for  $\tau$ -rigid modules: string algebras ringing",  
*Séminaire d'algèbre*, Institut Henri Poincaré (IHP), Paris, 16 March 2020
- "From Laws to Polynomial Identities: rewrapping Lehmer conjecture ",  
*The Junior Seminar in Pure Mathematics*, KU Leuven, 11 December 2019
- "The integral isomorphism problem, a helping hand from (geometric) group theory",  
*Algebra seminar UPV/EHU*, Bilbao, Spain, 17 April 2018
- "Polynomial identities through the eye of Kemer",  
*Algebra seminar Haifa university*, Israel, 23 November 2017
- "(integral) Isomorphism Problem, a (geometric) group theory point of view",  
*Algebra seminar Technion*, Haifa, Israel, 9 November 2017
- "A glimpse into the asymptotics of polynomial identities",  
*Antwerp algebra seminar*, University of Antwerp, Belgium, 28 April 2017
- "A glimpse into the asymptotics of polynomial identities",  
*Oberseminar Gruppen und Geometrie*, Bielefeld, Germany, 19 October 2016
- "Growth of Algebras and Groups", *Junior Seminar in Analytic, Geometric and Topological Group Theory*, Louvain-La-Neuve, Belgium, 29 January 2015
- "PI-exponent of algebras and some applications on distinguishing varieties of algebras",  
*Oberseminar algebra*, Stuttgart, Germany, 25 November 2014

## SUPERVISION

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### Supervision of Ph.D. students

- 2015 - 2019    Doryan Temmerman, *Fixed point properties for low rank linear groups over orders and applications to integral group rings*, co-supervisor: Eric Jespers  
Defended on 24th of May 2019

### Supervision of Bachelor thesis

2015 - 2016	Charlotte Verwimp, <i>Free groups and the Growth of Groups</i>
2015 - 2016	Maurits van Roozendaal, <i>The McKay Correspondence</i>
2019 - 2020	Maxime Wybouw, <i><math>S_n</math> through the looking glass en <math>GL_d</math> als de Mad Hatter - Shur-Weyl dualiteit</i>
2019 - 2020	Julie Symons, <i>How abelian can a finite group be? : The Joseph Conjectures</i>
2020 - 2021	Robynn Corveleyn, <i>Lie methods in Group Theory : On Wilson and Zelmanov's GI-PI theorem</i>
2021 - 2022	Wannes Malfait, <i>Taking commuting probabilities to infinity and beyond</i>
2021 - 2022	Marthe Ballon, <i>Buchbergers algorithm and optimization with Machine Learning</i>
2021 - 2022	Andreas Lorrain, <i>Van topologie naar combinatoriek : een introductie tot simplicale verzamelingen</i>
2021 - 2022	Charlotte Roelants, <i>A trip to the tropics: solving Hilbert's 16th problem using Tropical geometry</i>

### Supervision of pedagogical projects

2013 - 2014	Ilse Spruyt, Onderwijsstage Analyse I
2016 - 2017	Estelle Osman, Onderwijsstage Groepentheorie

## TEACHING EXPERIENCE

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### Lecturer for the following courses:

Fall 2019 - 2022	Ring- en Modultheorie <i>Introduction to representation theory of finite groups and to ring theory for 2nd year bachelor in Mathematics.</i>
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### Teaching Assistant for the following courses:

Fall 2019 & 2021	Lineaire algebra: stelsels, matrices en afbeeldingen <i>Linear algebra for 1st year Bachelor in Mathematics and Physics</i>
Fall 2012–2014 & Spring 2016–2019	Lineaire Algebra <i>Introduction to linear algebra, 1st year Bachelor in Informatics, Biology or Chemistry</i>
Fall 2018	Inleiding Algebraïsche Meetkunde <i>Introduction to algebraic geometry following Andreas Gathmann's course, 3th year Bachelor in Mathematics</i>
Spring 2016–2017	Galoistheorie <i>Galois theory for 3th Bachelor in Mathematics</i>
Spring 2015–2017	Inleiding Groepen Theorie <i>Introduction to group theory, 1st year Bachelor in Mathematics</i>
2012–2016	Clinics Lineaire Algebra <i>Evening classes on Introduction to linear algebra, Schakel in Informatics</i>
Spring 2013–2015	Wiskunde voor Computerwetenschappen <i>Wavelet and Fractal data compression, 2nd year Bachelor in Informatics</i>
Spring 2013–2015	Clinics Wiskunde voor Computerwetenschappen <i>Evening classes on Wavelet and Fractal data compression, Schakel in Informatics</i>

2012–2014	Analyse: Afleiden, integreren en numerieke software <i>Introduction to Analysis, 1st year Bachelor in Mathematics and Physics</i>
Spring 2013	Affiene en projectieve meetkunde <i>Introduction to affine and projective geometry, 2nd year Bachelor in Mathematics</i>
Spring 2013	Aanvullingen Lineaire Algebra <i>Follow up on linear algebra, 1st year Bachelor in Mathematics</i>

## FELLOWSHIPS

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2014-10	Aspirant Fellowship, Research Foundation Flanders (FWO) <i>Personal four year PhD research grant from the national science foundation (ranked 2nd)</i>
2015-10	FWO Aspirant Fellowship for Doryan Temmerman (joint with Eric Jespers) <i>PhD research grant for my doctoral student D. Temmerman.</i>
2018-10	Post-doctoral Fellowship, Research Foundation Flanders (FWO) <i>Personal three year post-doctoral grant (ranked 1st)</i>
2020-05	Grant of the FWO for a long research stay abroad <i>6732 euro for my long visit to Prof. B. Keller at Université de Paris</i>
2021-10	Senior Post-doctoral Fellowship, Research Foundation Flanders (FWO) <i>Personal three year post-doctoral grant</i>
2021-10	Chargé de Recherches, Fund for Scientific Research (F.R.S.–FNRS) <i>Personal three year post-doctoral grant</i>
2022-05	Grant of the FWO for a long research stay abroad <i>5148 euro for a long visit to Prof. B. Keller at Université Paris cité</i>

## RESEARCH VISITS AND STAYS

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2022-4/7	Université de Paris (Diderot), France, hosted by Bernhard Keller (four months)
2021-11 & 2022-2	ICMAT (Madrid), Spain, hosted by Leo Margolis (four weeks)
2021-6/7	Université de Paris (Diderot), France, hosted by Bernhard Keller (one month)
2019-3	University of the Basque Country, Spain, hosted by Urban Jezernik (three weeks)
2018-12	University of the Basque Country, Spain, hosted by Urban Jezernik (one week)
2018-4	University of the Basque Country, Spain, hosted by Urban Jezernik (two weeks)
2018-3	University of Glasgow, hosted by Theo Raedschelders (one week)
2017-10/11	Techion- Israel institute of Technology, hosted by Eli Aljadeff (two months)
2017-6	City Univeristy London, hosted by Florian Eisele (one week)
2016-10	University of Bielefeld, hosted by Ann Kiefer (one week)
2016-2	City Univeristy London, hosted by Florian Eisele (one week)
2015-2	University of Bonn, hosted by Theo Raedschelders (one week)
2014-11	University of Stuttgart, hosted by Leo Margolis (one week)