

# Iker de las Heras Kerejeta

## PERSONAL DATA

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UNIVERSITY: University of the Basque Country  
ADDRESS: Barrio Sarriena s/n, 48940 Leioa, Basque Country  
Faculty of Science and Technology, Department of Mathematics  
EMAIL: [iker.delasheras@ehu.eus](mailto:iker.delasheras@ehu.eus)  
RESEARCH LINE: Group theory, word problems, finite  $p$ -groups, pro- $p$  groups,  
Hausdorff dimension in profinite groups, conciseness of words

## EDUCATION AND POSITIONS

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CURRENT	<i>Assistant Professor</i>
APRIL 2024	<b>University of the Basque Country</b>
APRIL 2024	<i>Marie Curie Postdoc position</i>
FEBRUARY 2023	<b>Universidade de Brasília, Brazil</b> Under the supervision of P. SHUMYATSKY
JANUARY 2023	<i>Postdoc position</i>
FEBRUARY 2021	<b>Heinrich-Heine-Universität Düsseldorf, Germany</b> Under the supervision of B. KLOPSCH
JANUARY 2021	<i>Teacher and researcher position</i>
DECEMBER 2020	<b>Heinrich-Heine-Universität Düsseldorf, Germany</b>
OCTOBER 2020	<i>Ph.D. in Mathematics and Statistics</i>
OCTOBER 2017	<b>University of the Basque Country</b> Thesis: <i>Some topics on finite <math>p</math>-groups and pro-<math>p</math> groups</i> Advisor: G. FERNÁNDEZ-ALCOBER With honours (Cum laude), international mention
FEBRUARY 2017	<i>Master's Degree in Mathematics</i>
OCTOBER 2015	<b>University of Padova, Italy</b> Thesis: <i>Intersections of maximal subgroups in finite solvable groups</i> Advisor: A. LUCCHINI 110/110, cum laude
JUNE 2015	<i>Bachelor Degree in Mathematics</i>
SEPTEMBER 2011	<b>University of the Basque Country</b> Thesis: <i>Finite <math>p</math>-Groups</i> Advisor: G. FERNÁNDEZ-ALCOBER Graduated with "Excellence"

## TEACHING

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JANUARY 2025	<i>Grupos y Representaciones</i>
SEPTEMBER 2024	Degree in Mathematics University of the Basque Country 15 teaching hours (1,5 credits)
JANUARY 2025	<i>Zenbakizko Metodoak I (Numerical Analysis)</i>
SEPTEMBER 2024	Degree in Mathematics University of the Basque Country 96 teaching hours (9,6 credits)

JULY 2024	<i>Algebraic Geometry</i>
APRIL 2024	Degree in Mathematics University of the Basque Country 20 teaching hours (2 credits) Mark of the students: 4,8/5
JULY 2024	<i>Matematika II</i>
APRIL 2024	Degree in Mathematics University of the Basque Country 25 teaching hours (2,5 credits) Mark of the students: 4,6/5
FEBRUARY 2021	<i>Introduction to Lie Algebras</i>
DECEMBER 2020	Degree in Mathematics Heinrich-Heine-Universität Düsseldorf, Germany
AUGUST 2018	<i>Analisi Matematiko eta Numerikoa (Mathematical and Numerical Analysis)</i>
DECEMBER 2017	Degree in Engineering of Renewable Energies University of the Basque Country 105 teaching hours (10,5 credits) Mark of the students: 4,3/5
NOVEMBER 2017	<i>Ecuaciones Diferenciales (Differential Equations)</i>
SEPTEMBER 2017	Students from Several Engineering Degrees Academia Zilargi, Bilbao
NOVEMBER 2017	<i>Estadística (Statistics)</i>
SEPTEMBER 2017	Students from Several Engineering Degrees Academia Zilargi, Bilbao
JUNE 2017	<i>Intensive Course in C Programming</i> Academia Zilargi, Bilbao

## PUBLICATIONS

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- 2024 | *The lower  $p$ -series of analytic pro- $p$  groups and Hausdorff dimension*  
Authors: I. DE LAS HERAS, B. KLOPSCH, A. THILLAISUNDARAM  
ArXiv: 2402.06876v1
- 2024 | *On the lattice of closed subgroup of a profinite group*  
Authors: F. DE GIOVANNI, I. DE LAS HERAS, M. TROMBETTI  
International Journal of Algebra and Computations (to appear)
- 2024 | *Powerful 3-Engel groups*  
Authors: I. DE LAS HERAS, M. NOCE, G. TRAUSTASON  
Journal of Pure and Applied Algebra (to appear)
- 2024 | *Degree of commutativity of wreath products with infinite cyclic top group*  
Authors: I. DE LAS HERAS, B. KLOPSCH, A. ZOZAYA  
European Journal of Mathematics (to appear)
- 2023 | *Strong conciseness of coprime commutators in profinite groups*  
Authors: I. DE LAS HERAS, M. PINTONELLO, P. SHUMYATSKY  
Journal of Algebra
- 2022 | *The finitely generated Hausdorff spectra of a family of pro- $p$  groups*  
Authors: I. DE LAS HERAS, A. THILLAISUNDARAM  
Journal of Algebra
- 2022 | *A pro 2-group with full normal Hausdorff spectra*  
Authors: I. DE LAS HERAS, A. THILLAISUNDARAM  
Journal of Group Theory

- 2022 | *A pro- $p$  group with full normal Hausdorff spectra*  
 Authors: I. DE LAS HERAS, B. KLOPSCH  
 Mathematische Nachrichten
- 2021 | *Powerfully solvable and powerfully simple groups*  
 Author: I. DE LAS HERAS, G. TRAUSTASON  
 Journal of Pure and Applied Algebra
- 2021 | *Lower central words in finite  $p$ -groups*  
 Authors: I. DE LAS HERAS, M. MORIGI  
 Publicacions Matemàtiques
- 2020 | *Commutators in finite  $p$ -groups with 3-generator derived subgroup*  
 Author: I. DE LAS HERAS  
 Journal of Algebra
- 2019 | *Commutators in finite  $p$ -groups with 2-generator derived subgroup*  
 Authors: I. DE LAS HERAS, G. FERNÁNDEZ-ALCOBER  
 Israel Journal of Mathematics
- 2019 | *Intersections of maximal subgroups in prosolvable groups*  
 Authors: I. DE LAS HERAS, A. LUCCHINI  
 Communications in Algebra

## STAYS ABROAD

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- JULY 2023 | *Three-month stay at the Basque Center for Applied Mathematics, Bilbao*  
 MAY 2023 | Host: M. EPELDE
- MAY 2023 | *Two-week stay at the University of Naples, Italy*  
 Host: M. TROMBETTI
- APRIL 2023 | *Three-month stay at the University of the Basque Country, Leioa*  
 FEBRUARY 2023 | Host: G. FERNÁNDEZ-ALCOBER
- SEPTEMBER 2022 | *Five-week stay at the University of Brasilia, Brazil*  
 Host: P. SHUMYATSKY
- MARCH 2022 | *Two-week stay at the University of Salerno, Italy*  
 Host: M. NOCE
- JANUARY 2020 | *One-month stay at the University of Bath, United Kingdom*  
 Host: G. TRAUSTASON
- NOVEMBER 2019 | *Two-week stay at the University of Salerno, Italy*  
 Host: M. NOCE
- JULY 2019 | *One-week stay at the University of Dusseldorf, Germany*  
 Host: B. KLOPSCH
- MARCH 2019 | *One-month stay at the University of Bologna, Italy*  
 Host: M. MORIGI
- DECEMBER 2018 | *Two-month stay at the University of Padova, Italy*  
 OCTOBER 2018 | Host: A. LUCCHINI

## OTHER PUBLICATIONS AND DISSEMINATION

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- FEBRUARY 2024 | *Monthly collaborator in the radio show Baipasa*  
 JANUARY 2023 | Euskadi Irratia
- JUNE 2023 | *Interview with the Fields Medals winner Efim Zelmanov*  
 Published on the virtual magazine Campusa

- 2021 | *Hausdorffen dimentsioa talde profinituetan* (publication)  
 Authors: I. DE LAS HERAS, A. ZOZAYA  
 Ekaia (science magazine)
- 2020 | *Collaboration in the Science Week of Bilbao*  
 Short talks to young students
- 2019 | *Ibilaldi matematikoa - Paseo matemático* (publication)  
 Author: M. EPELDE, X. DIEZ, E. DI DOMENICO, I. DE LAS HERAS, M. NOCE, A. ZOZAYA  
 DivulgaMAT (science magazine)

## FURTHER EXPERIENCE

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- Referee for several journals*
- NOVEMBER 2017 | *Internship*  
 MAY 2017 | Advisor: G. FERNÁNDEZ-ALCOBER  
 Research line: Commutators, Finite  $p$ -groups, Powerful  $p$ -groups, Pro- $p$  groups  
 University of the Basque Country
- OCTOBER 2016 | *Internship with the "Training and Research Unit" of the UPV/EHU*  
 JULY 2016 | Advisor: G. FERNÁNDEZ-ALCOBER  
 Research line: Commutators, Finite  $p$ -groups, Powerful  $p$ -groups  
 University of the Basque Country
- SEPTEMBER 2015 | *Internship with the "Training and Research Unit" of the UPV/EHU*  
 JUNE 2015 | Advisor: G. FERNÁNDEZ-ALCOBER  
 Research line: Commutators, Finite  $p$ -groups, Powerful  $p$ -groups  
 University of the Basque Country

## SELECTED TALKS

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- OCTOBER 2024 | *Conciseness of words and equationally Noetherian groups*  
 Invited speaker in the international conference AGTA - Reinhold Baer Prize  
 Napoli (Italy)
- JUNE 2023 | *Hausdorff dimension and Hausdorff spectra in profinite groups*  
 Invited speaker in the international conference AGTA  
 Lecce (Italy)
- MAY 2023 | *Hausdorff dimension and Hausdorff spectra in profinite groups*  
 Universidad Autónoma de Madrid, Spain
- SEPTEMBER 2021 | *Powerfully solvable and powerfully simple groups*  
 New Trends Around Profinite Groups (international conference)  
 Levico (Italy)
- JUNE 2021 | *Powerfully solvable and powerfully simple groups*  
 GAGTA (international conference)  
 ICMS (Edinburgh)
- MARCH 2021 | *Hausdorff dimension and Hausdorff spectra in profinite groups*  
 Invited speaker in Ischia Online Group Theory Conference
- JANUARY 2020 | *Hausdorff dimension and Hausdorff spectra in profinite groups*  
 University of Lincoln, United Kingdom
- NOVEMBER 2019 | *Lower central words in finite  $p$ -groups*  
 University of Salerno, Italy
- JUNE 2019 | *Lower central words in finite  $p$ -groups*  
 Heinrich-Heine-Universität Düsseldorf, Germany

APRIL 2019	<i>Simple commutators in finite <math>p</math>-groups</i> Engel Conditions in Groups (international conference) University of Bath, United Kingdom
NOVEMBER 2018	<i>Commutators in finite <math>p</math>-groups</i> University of Padova, Italy
SEPTEMBER 2018	<i>Commutators in finite <math>p</math>-groups</i> UMI-SIMAI-PTM Joint Meeting (international conference) University of Wroclaw, Poland
JUNE 2018	<i>Commutators in finite <math>p</math>-groups</i> XII Encuentro de Teoría de Grupos (international conference) University of Saragossa, Spain
NOVEMBER 2017	<i>Words in groups</i> Algebra Seminar, University of the Basque Country
JUNE 2017	<i>Intersection of maximal subgroups in prosolvable groups</i> GAGTA (international conference) University of the Basque Country

## POSTER PRESENTATIONS

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FEBRUARY 2021	<i>Hausdorff dimension and Hausdorff spectra in pro-<math>p</math> groups</i> Ischia Online Group Theory Conference (international conference) Università di Salerno, Italy
FEBRUARY 2019	<i>Commutators in finite <math>p</math>-Groups</i> Congreso Bienal de la RSME (international conference) Universidad de Santander, Spain
MARCH 2018	<i>Commutators in finite <math>p</math>-Groups</i> Ischia Group Theory 2018 (international conference) Università di Salerno, Italy

## COURSES

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MAY 2023	<i>Lie methods in group theory</i> University of the Basque Country By: P. SHUMYATSKY
NOVEMBER 2021	<i>Conciseness of group words in residually finite groups</i> University of Padova, Italy By: P. SHUMYATSKY
SEPTEMBER 2021	<i>Probabilistic Group Theory</i> University of the Basque Country By: M. VANNACCI
JUNE 2021	<i>Groups, Languages and Automata</i> University of the Basque Country By: M. NOCE
OCTOBER 2019	<i>Introduction to Spectral Sequences</i> University of the Basque Country By: A. DÍAZ RAMOS
MAY 2019	<i>Growth and Relations of Graded Rings</i> Universidad Autónoma de Madrid, Spain By: A. JAIKIN

JANUARY 2019	<i>Small cancellation theory</i> Universidad Autónoma de Madrid, Spain By: D. GRUBER
JANUARY 2019	<i>Nilpotent and solvable groups</i> University of the Basque Country By: G. FERNÁNDEZ-ALCOBER, J. GONZÁLEZ
NOVEMBER 2018	<i>Representation growth</i> University of Padova, Italy By: B. KLOPSCH
MAY 2018	<i>Group-based cryptography</i> University of Salerno, Italy By: D. KAHROBAEI
MARCH 2018	<i>Branch groups</i> University of the Basque Country By: M. NOCE, E. DI DOMENICO, and S. GÜL
FEBRUARY 2018	<i>Computational group theory with GAP</i> University of the Basque Country By: U. JEZERNIK and P. MORAVEC

## ORGANIZATION OF R&D ACTIVITIES

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JUNE 2023	<i>Organiser of the international conference Finite and Residually Finite Groups</i> Bilbao
FEBRUARY 2020	<i>Organiser of the international conference GTA Gran Bilbao II</i> University of the Basque Country
JULY 2019	<i>Organiser of the international conference young Geometry and Asymptotic Group Theory with Applications (yGAGTA)</i> University of the Basque Country
JUNE 2019	<i>Organiser of the international conference GTA Gran Bilbao</i> University of the Basque Country
JUNE 2017	<i>Organiser of the international conference Geometry and Asymptotic Group Theory with Applications (GAGTA)</i> Bizkaia Aretoa / University of the Basque Country

## GRANTS AND PRIZES

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APRIL 2024 FEBRUARY 2023	<i>Maria Skłodowska-Curie postdoctoral fellowship</i> Institution: European Commission
SEPTEMBER 2022	<i>Reinhold Baer Prize 2022</i> International prize for the best PhD thesis or publication in group theory Institution: AGTA and Aracne
JANUARY 2023 FEBRUARY 2021	<i>Postdoctoral fellowship</i> Institution: Basque Government
JANUARY 2020	<i>Mobility grant</i> Aim: Stay at the University of Bath, United Kingdom Institution: University of the Basque Country
MARCH 2019	<i>Mobility grant</i> Aim: Stay at the University of Bologna, Italy Institution: University of the Basque Country
OCTOBER 2020	<i>Ph.D. fellowship</i>

OCTOBER 2017	Institution: University of the Basque Country
FEBRUARY 2017	<i>Merit-based prize</i> Institution: University of Padova
OCTOBER 2016 JULY 2016	<i>Grant of the "Training and Research Unit"</i> Aim: Initiation to research Institution: University of the Basque Country
SEPTEMBER 2015 JUNE 2015	<i>Grant of the "Training and Research Unit"</i> Aim: Initiation to research Institution: University of the Basque Country

## MEMBERSHIPS

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JANUARY 2026 FEBRUARY 2023	<i>Group Conciseness</i> Funding body: European Comission (Marie Curie programme) Principal investigator: IKER DE LAS HERAS Amount of the grant: 239.922,72 €
DECEMBER 2025 JANUARY 2022	<i>Group theory, topology, and applications</i> Funding body: Basque Government Principal investigator: ILYA KAZACHKOV Amount of the grant: 338.100 €
JULIO 2025 AUGUST 2021	<i>Grupos y geometría II</i> Funding body: Ministerio de Ciencia e Innovación Principal investigators: GUSTAVO FERNÁNDEZ, MONTSERRAT CASALS Amount of the grant: 50.820 €
FEBRUARY 2023 DECEMBER 2020	<i>GRK: Algebro-Geometric Methods in Algebra, Arithmetic and Topology</i> Funding body: German Research Foundation (DFG) Principal Investigator: STEFAN SCHRÖER Amount of the grant: 8.425.520 €
CURRENT DECEMBER 2020	<i>Red ibérica de teoría de grupos</i> Funding body: Ministerio de Ciencia e Innovación Principal Investigator: CONCEPCIÓN MARTINEZ Amount of the grant: 2.935,99 €
SEPTEMBER 2021 OCTOBER 2018	<i>Grupos y geometría</i> Funding body: Ministerio de Ciencia e Innovación Principal investigators: GUSTAVO FERNÁNDEZ, JON GONZALEZ Amount of the grant: 46.706 €
DECEMBER 2021 OCTOBER 2018	<i>Groups, topology, and applications</i> Funding body: Basque Government Principal investigator: ILYA KAZACHKOV Amount of the grant: 370.486 €

## LANGUAGES

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BASQUE	Mothertongue. Certificate level: C1   Euskararen Gaitasun Agiria (EGA)
SPANISH	Mothertongue
ENGLISH	Fluent. Certificate level: C1   Certificate of the University of the Basque Country
ITALIAN	Fluent. Certificate level: C1   Certificate of the University of Padova
PORTUGUESE	B1 level
GERMAN	A2 level

## COMPUTER SKILLS

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ADVANCE KNOWLEDGE |  $\text{\LaTeX}$ , GAP, Mathematica, MATLAB, Octave, C, Python  
INTERMEDIATE KNOWLEDGE | C++, Java