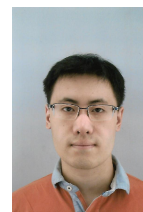Hoegi-ro 85, Dongdaemun-gu
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David Xu

Presentation

I am currently a Research Fellow (postdoc) at Korea Institute for Advanced Study (KIAS) in Seoul, South Korea. I am attached to the School of Mathematics and my mentor is Sang-hyun Kim.
I defended my Ph.D. thesis on July 12th 2024.

My research interests revolve around hyperbolic geometry and group actions. I work mainly on the *infinite-dimensional hyperbolic space* and *representations into its groups of isometries* with various *discreteness properties*. I also started recently to wonder about infinite-dimensional higher rank symmetric spaces in general.

Employment

2025–current	**Research Fellow (postdoc)**, *Korea Institute for Advance Study (KIAS)*, Seoul, South Korea.
2023–2024	**ATER (teaching and research assistant)**, *IUT de Sceaux*, Sceaux, France.

Education

2020–2024	**Ph.D. in Mathematics**, *Université de Lorraine*, Nancy, Discrete isometry groups of the infinite-dimensional hyperbolic space. Supervised by Bruno Duchesne and Gye-Seon Lee
2019–2020	**Master degree in Mathematics**, *Université de Strasbourg*, Strasbourg.
2018–2019	**Agrégation externe de Mathématiques, option D Informatique**, *ENS Rennes and Université de Rennes 1*, Rennes, rank : 110.
2016–2018	**Bachelor degree in Computer Science**, *ENS Rennes and Université de Rennes 1*, Rennes.
2016–2017	**Bachelor degree in Mathematics**, *ENS Rennes and Université de Rennes 1*, Rennes.

Publications and preprints

2024	**Convex-cocompact representations into the isometry group of the infinite-dimensional hyperbolic space**, *Preprint (submitted), Arxiv link*.

Invited talks

25 April 2025 – upcoming	**Spring Meeting of the Korean Mathematical Society**, *KAIST*, Daejeon. Special Session on Geometric Group Theory of the KMS Spring Meeting
19 February 2025	**VISGAT Seminar**, *KIAS*, Seoul. Virtual Seminar on Geometry and Topology : "Convex-cocompact representations into the isometry group of the infinite-dimensional hyperbolic space"
21 January 2025	**SNU Exchange Seminar**, *SNU*, Seoul. Geometry and topology seminar : "Convex-cocompact representations into the isometry group of the infinite-dimensional hyperbolic space"

9 December 2024	**Conference : Arithmetic groups, hyperbolic manifolds and computation**, Bordeaux. Conference talk : "Irreducible actions of Coxeter groups on the infinite-dimensional hyperbolic space"
10 October 2024	**Geometry and topology seminar**, Marseille. Geometry and topology seminar : "Déformations de représentations convexes cocompactes dans le groupe d'isométries de l'espace hyperbolique de dimension infinie"
27 May 2024	**Ergodic theory seminar**, *IRMAR*, Rennes. Ergodic theory seminar : "Déformations de représentations convexes cocompactes dans le groupe d'isométries de l'espace hyperbolique de dimension infinie"
18 April 2024	**Workshop on Submanifolds of locally symmetric spaces**, *ANR GAPR*, Autrans. Conference talk : "Deformations of convex-cocompact representations into the isometry group of the infinite-dimensional hyperbolic space"
13 February 2024	**PS-SNU Geometry/Topology Online Seminar**. (Half-)online seminar : "Deformations of convex-cocompact representations into the isometry group of the infinite-dimensional hyperbolic space"
8 June 2023	**Pampers Seminar**, *IRMAR*, Rennes. Rennes' Ph.D. students' seminar : "Représentations convexes cocompactes dans le groupe des isométries de l'espace hyperbolique de dimension infinie"
3 May 2023	**Ph.D. Students' Seminar**, *IECL*, Nancy. Lorraine's Ph.D. students seminar : "L'ensemble de Mandelbrot, et un tour de magie"
30 January 2023	**GOA Seminar**, *IMO*, Orsay. Groups and Operator Algebras seminar of Orsay : "Convex cocompact representations into the group of isometries of the infinite dimensional hyperbolic space"
19 May 2022	**Ph.D. Students' Seminar**, *IRMA*, Strasbourg. Strasbourg's Ph.D. students seminar : "Représentations convexes cocompactes dans le groupe des isométries de l'espace hyperbolique de dimension infinie"
12 May 2022	**Ph.D. Students' Seminar**, *Institut Fourier*, Grenoble. Grenoble's Ph.D. students seminar : "Convex cocompact representations into the isometry group of the infinite dimensional hyperbolic space"
23 September 2021	**"Groupes et géométrie" meeting at "la maison du Kleebach"**, *ANR AGIRA*, Kleebach. "Groupes de réflexions agissant sur l'espace hyperbolique de dimension infinie"
29 April 2021	**Ph.D. Students' Seminar**, *IRMA*, Strasbourg. Strasbourg's Ph.D. students seminar : "Algèbres de Clifford"

Attended conferences and meetings

February 2023	**Young Geometric Group Theory XI**, *WWU Münster*, Münster, Germany.
November 2022	**Paroles aux jeunes chercheuses et chercheurs du *GDR Platon* 2022**, *IMO*, Orsay, France.
October 2022	**Big Mapping Class Groups and Diffeomorphism Groups**, *CIRM*, Marseille, France.
June 2022	**Trimestre thématique de l'IHP « Groups acting on fractals, hyperbolicity and self-similarity - Hyperbolic groups and their generalisations »**, *IHP*, Paris, France.
May 2022	**Trimestre thématique de l'IHP « Groups acting on fractals, hyperbolicity and self-similarity - Self-similarity of groups, trees and fractals »**, *IHP*, Paris, France.
November 2021	**Rencontre des jeunes chercheuses et jeunes chercheurs du *GDR Platon* 2021**, *CIRM*, Marseille, France.
August 2021	**Delzantfest**, *IHES*, Orsay, France. Celebrating the 60 years anniversary of Thomas Delzant
January 2021	**Topics at the interface of low-dimensional group actions and geometric structures**, *National University of Singapore*, Singapore. Online conference

December 2020	**Paroles aux jeunes géomètres dynamiques du réseau *Platon* 2020**. Online conference
October 2020	**Théorie mesurée et géométrique des groupes, rigidité, algèbres d'opérateurs**, *CIRM*, Marseille, France.

Teaching

2024–2025 Fall semester	**Mathematical tools for Management**, *IUT de Sceaux*, Sceaux, for 1st year undergraduate students in management and marketing. Lectures and classes **Numerical tools for management**, *IUT de Sceaux*, Sceaux, for 2nd year undegraduate students in management and marketing. Integrated courses (probability)
2023–2024 Spring semester	**Mathematical tools for Management**, *IUT de Sceaux*, Sceaux, for 1st year undegraduate students in management and marketing. Lectures and classes **Digital data processing**, *IUT de Sceaux*, Sceaux, for 2nd year undegraduate students in management and marketing. Lectures and classes (statistics)
2023–2024 Fall semester	**Mathematical tools for Management**, *IUT de Sceaux*, Sceaux, for 1st year undegraduate students in management and marketing. Lectures and classes **Numerical tools for management**, *IUT de Sceaux*, Sceaux, for 2nd year undegraduate students in management and marketing. Integrated courses (probability) **Numerical tools for management**, *IUT de Sceaux*, Sceaux, for 2nd year undegraduate students in management and marketing. Classes (probability)
2022–2023 Fall semester	**Mathematics**, *Université de Lorraine*, Nancy, for 1st year undergraduate students in engineering curriculum. Lectures and classes **Financial mathematics**, *IUT Nancy-Charlemagne*, Nancy, for 1st year undergraduate students in management. Tutorials
2021–2022 Fall semester	**Numerical methods**, *Université de Lorraine*, Nancy, for 2nd year undergraduate students in mathematics. Classes and practical work (Matlab) **Analysis**, *Université de Lorraine*, Nancy, for 2nd year undergraduate students in mathematics. Classes **Numerical analysis**, *ENSEM*, Nancy, for 3rd year undergraduate students in engineering school. Classes and practical work (Matlab)
2020–2021 Fall semester	**Numerical methods**, *Université de Lorraine*, Nancy, for 2nd year undergratuate students in mathematics. Classes and practical work (Matlab) **Mathematical tool for management**, *IUT Nancy-Charlemagne*, Nancy, for 1st year undergraduate students in management and marketing. Classes

Grants, awards and honors

2020–2021 **LUE Graduate**, *Lorraine Université d'Excellence*, Nancy.
Grant from the *DrEAM* project for funding a two months visit at *Seoul National University*, Seoul, South Korea

Visits and internships

October 2024 **Visit**, *Seoul National University*, Seoul, South Korea.
Visit funded by the PHC-STAR program

March–April 2022 **Visiting student**, *Seoul National University*, Seoul, South Korea.
Visit of Seoul National University funded by the DrEAM project from LUE "Lorraine Université d'Excellence", supervised by Gye-Seon Lee

May–July 2020 **Master internship**, *Institut Elie Cartan*, Nancy, France.
Master internship on the "isometries of the infinite-dimensional hyperbolic space", supervised by Bruno Duchesne

May–July 2018 **Master internship**, *Mathematisches Institut der Universität Heidelberg*, Heidelberg, Germany.
Master internship on "hyperbolic geometry", supervised by Anna Wienhard and Gye-Seon Lee

May–June 2017 **Bachelor internship**, *Institut Camille Jordan*, Lyon, France.
Bachelor internship on "valued fields in model theory", supervised by Itaï Ben Yaacov

May 2013 **Highschool internship**, *Institut Camille Jordan*, Lyon, France.
Highschool "discovery" internship organised by the association *Science Académie* on differential equations in compartmental models (SIR model)

Some other experiences, responsibilities and outreach activities

March 2025 π**–day at KIAS**, *KIAS*, Seoul.
Organisation of a mathematical event for elementary and middle school children

2025–current **VISGAT Seminar**, *KIAS/KAIST*.
Organiser of the VISGAT Seminar

2021–2023 ***MATh.en.JEANS***, *Collège Edmond de Goncourt*, Pulnoy.
Animating *MATh.en.JEANS* workshops for middle school students

2020–2022 **Doctoral students' representative in the doctoral school *IAEM***, *Université de Lorraine*, Nancy.

June 2017 **Exam preparation tutor**, *Lycée La Martinière Monplaisir*, Lyon.
Tutoring for the oral competitive exams of CPGE

2016 **Tutor**, *Lycée Émile Zola*, Rennes.
Tutoring for highschool students

March 2013 **Music teacher**, *École de musique Guy Candeloro*, Lyon.
Replacing a music theory teacher and an accordion teacher in a music school for 1 month