

Nguyen-Thi_(name)
Dang_(surname)

Bâtiment 307, rue Michel Magat
Facultés des Sciences d'Orsay, Université Paris-Saclay
F-91405 Orsay Cedex
☎ (+33) 1-69-15-57-76
✉ nguyen-thi.dang@universite-paris-saclay.fr
Nationality : French

Keywords : group actions, semisimple Lie groups, topological dynamics, Weyl chamber flows, spectrum of a product of random square matrix, Benoist cone, product of loxodromic elements.

Positions

- 09/01/2022– **Assistant Professor at LMO (Laboratoire de Mathématique d'Orsay)**, *Topology and Dynamics team*, Paris-Saclay University, Orsay, France
- 10/01/2019– **Post-Doc at the University of Heidelberg**, *Research Station "Geometry and Dynamics"*, Universität Heidelberg, Germany
- 09/23/2019 **PhD defense**, *Ergodic Theory Team, IRMAR*, University of Rennes, France
- 2016–2019 **PhD under the supervision of François Maucourant and Barbara Schapira**, *Ergodic Theory Team, IRMAR*, University of Rennes, France

Grants and funding

- 2019–2022 **Funding from the RTG 2229 "Asymptotic Invariants and Limits of Groups and Spaces"**, Heidelberg, Germany
- 2016–2019 **PhD funding from ENS Paris-Saclay**, Cachan, France
- 2013–2014 **Master 1 grant from FMJH**, Orsay, France

Research papers

Preprint

- 2021 **Equidistribution and counting of maximal flats**, Submitted, Arxiv <https://arxiv.org/abs/2202.08323>, joint work with Jialun Li

Abstract : Let G be a semisimple Lie group without compact factor and $\Gamma < G$ a torsion-free, cocompact, irreducible lattice. According to Selberg, periodic orbits of regular Weyl chamber flows live on maximal flat periodic tori of the space of Weyl chambers. We prove that these flat periodic tori equidistribute exponentially fast towards the quotient of the Haar measure. From the equidistribution formula, we deduce a higher rank prime geodesic theorem. These counting and equidistribution results also hold in the non cocompact, finite covolume case for $G = \mathrm{SL}(d, \mathbb{R})$ and $\Gamma < \mathrm{SL}(d, \mathbb{Z})$ a finite index subgroup.

Accepted papers

- 2021 **Topological mixing of positive diagonal flows**, *Accepted for publication in Israel Journal of Math*, on arXiv 2011.12900 or on HAL hal-03010830, version 2

Abstract: Let G be a semi-simple real Lie group without compact factors and $\Gamma < G$ a Zariski dense, discrete subgroup. We study the topological dynamics of positive diagonal flows on $\Gamma \backslash G$. We extend Hopf coordinates to Bruhat-Hopf coordinates of G , which gives the framework to estimate the elliptic part of products of large generic loxodromic elements. By rewriting results of Guivarc'h-Raugi into Bruhat-Hopf coordinates, we partition the preimage in $\Gamma \backslash G$ of the non-wandering set of mixing

regular Weyl chamber flows, into finitely many dynamically conjugated subsets. We prove a necessary condition for topological mixing, and when the connected component of the identity of the centralizer of the Cartan subgroup is abelian, we prove it is sufficient.

2020 **Topological mixing of the Weyl chamber flow**, *Ergodic Theory and dynamical systems*, (preprint 2018), joint work with O. Glorieux

Abstract: In this paper, we study topological properties of the right action by translation of the Weyl Chamber flow on the space of Weyl chambers. We obtain a necessary and sufficient condition for topological mixing.

PhD thesis

2019 **Dynamics of group action on homogeneous spaces of higher rank and infinite volume**, HAL Id:tel-02301728, version 1, under the supervision of Barbara Schapira and François Maucourant

Abstract : Let G be a semisimple Lie group (of higher rank) and Γ a Zariski dense subgroup of G (of infinite covolume). In this thesis, we discuss two questions related to the *Benoist limit cone* of Γ : one concerns random walks, the other topological mixing of the directional Weyl chamber flow. In the introduction, we state the main results of this thesis in their context. In the second chapter, we recall some general facts about Lie groups and loxodromic elements. In the third chapter, we prove that every point of the interior of the limit cone is a Lyapunov vector. In the fourth chapter, we construct local coordinates of G and give key tools for the remaining parts. In the fifth chapter, we introduce the invariant subsets of G . In the last chapter of this thesis, we prove the topological mixing criterion of regular directional Weyl chamber flow obtained with O. Glorieux and we generalize this criterion to $\Gamma \backslash G$ for a class of Lie groups including $SL(n, \mathbb{R})$, $SL(n, \mathbb{C})$, $SO_0(p, p+2)$.

Oberwolfach report

2022 **MFO report: Mini-Workshop Anosov**³, *webpage of the report*, reporter of the mini-workshop

I collected the abstracts of the talks (including mine) given during the Mini-Workshop 2149a Anosov³. It took place in Oberwolfach from the 5th to the 11th of December 2021 and was organised by Benjamin Delarue (formerly Küster), Colin Guillarmou, Maria Beatrice Pozzetti and Tobias Weich.

Service

6/2020– **Participation to the creation and running of HEGL**, with Brice Loustau,
8/2022 *Diaaeldin Taha, Valentina Disarlo, Menelaos Zikidis, Anja Randecker, Anna Wienhard*,
Heidelberg, Germany

The Heidelberg Experimental Geometry Lab (HEGL) was founded in 2021 by Anna Wienhard and is the first geometry lab in Europe to join the Geometry Labs United network.

2020–2021 **Organizer of the 'Junior Geometry Seminar'**, *Seminar talks by the Bachelor and Master students of the geometry teams*, Heidelberg, Germany

2017–2018 **Co-organizer of the PhD seminar in geometry and algebra**, *IRMAR*, Rennes, France