

Session régionale du séminaire des doctorantes

Rapport sur les contributions

ID de Contribution: 1

Type: **Non spécifié**

Caractérisation algébrique des horomorphismes

vendredi 28 novembre 2025 14:30 (35 minutes)

TBA

Orateur: SALHANY, Patrick

ID de Contribution: 2

Type: **Non spécifié**

Image-based multi-scale plant species monitoring: evaluating the impact of land management changes on biodiversity

vendredi 28 novembre 2025 16:35 (35 minutes)

Thanks to modern data infrastructures, large amounts of images describing vegetation are available at multiple scales: at the individual scale (e.g., Pl@ntNet images), at the landscape scale (e.g., LUCAS images), and at the ecosystem scale (e.g., Sentinel 2 data). Usually, these different types of visual content are processed separately. Images of individual plants are typically used to train species identification models. Images of communities are rather used for ecotope characterization. Remote sensing images are used for land monitoring, or more recently for species distribution modeling. The combination of these three scales, however, has not yet been leveraged, or only in very specific scenarios. We propose to combine those multi-scale vegetation images to derive biodiversity-relevant features using deep contrastive learning models, and incorporate these multi-scale multi-modal features in species distribution models to more accurately address species mapping at EU scale and derive biodiversity indicators at local scales for better land management. We first train our model on a pair-matching pretext task to align GPS coordinates with images in a common representation space; before evaluating it on a downstream species prediction task. We train and evaluate our method over the CBN-Med region of France, by using Sentinel-2A satellite imagery, landscape images from the EU LUCAS dataset, Pl@ntNet images and citizen science plant observations from the GeoLifeCLEF2024 dataset. The code, model and parts of the dataset are publicly available on GitHub through the Malpolon framework. We show that enriching our classification model with a contrastive pre-training task gives similar or better performances on a species prediction task compared to training a BCE loss from scratch. This opens more possibilities to training species prediction models in areas with few or no observations (few-shot learning).

Orateur: LARCHER, Théo

ID de Contribution: 3

Type: **Non spécifié**

Concentration in selection-mutation models: error estimates and asymptotic expansions

vendredi 28 novembre 2025 15:05 (35 minutes)

TBA

Orateur: GUINET, Caroline

ID de Contribution: 4

Type: **Non spécifié**

The extremal process of two-speed branching random walk

vendredi 28 novembre 2025 15:05 (35 minutes)

We consider a two-speed branching random walk, which consists of two macroscopic stages with different reproduction laws. We prove that the centered maximum converges in law to a Gumbel variable with a random shift and the extremal process converges in law to a randomly shifted decorated Poisson point process, which can be viewed as a discrete analog for the corresponding results for the two-speed branching Brownian motion, previously established by Bovier and Hartung(2014)

Orateur: LUO, Lianghai

ID de Contribution: 5

Type: **Non spécifié**

Motivation to K-theory of C^* algebras via Atiyah Singer theorem and Fredholm operators

vendredi 28 novembre 2025 16:00 (35 minutes)

This talk will be structured as follows: the first will be quite historical, talking about operators on a Hilbert space, Fredholm operators, indices.. In the second one, we introduce the C^* algebraic K-theory framework and we relate it to the problem of Fredholm indices computation. If we have enough time, we look at a specific example illustrating which kind of link is arised by Atiyah Singer theorem.

Orateur: THIRY, Florian

ID de Contribution: 6

Type: **Non spécifié**

Følner sequences without group actions

vendredi 28 novembre 2025 14:30 (35 minutes)

Amenable groups have historically been introduced as a response to the Banach-Tarski paradox, which states that one can separate a ball in a disjoint union of subsets, rotate said subsets around and obtain two copies of the original ball. I will present this notion in this classical framework, and more precisely a common strategy to prove amenability: finding Følner sequences. This will lead us to a result of Alex Eskin, David Fisher and Kevin Whyte using Følner sequences in a slightly different context. This result is a good example on how to use Følner sequences without information on any group in order to study behaviors of areas and volumes.

Orateur: FROGER, Luca

ID de Contribution: 7

Type: **Non spécifié**

Univariate Stochastic Modeling of Rainfall Extremes in Montpellier

vendredi 28 novembre 2025 16:35 (35 minutes)

Flood risk is particularly high in urban areas due to soil impermeability, which prevents water absorption. Flooding can occur after periods of intense rainfall or during prolonged episodes of moderate rain. This is especially true in Montpellier, where heavy precipitation events frequently result in urban flooding. Modeling heavy rainfall and dry periods is essential to prevent urban flooding. In this study, we use rainfall data recorded at a one-minute resolution, which provides a much finer temporal scale than typically available in similar studies. While most approaches rely on continuous distributions, our study focuses on discrete data, motivating the use of a discrete distribution. For now, we assume temporal independence of the rainfall observations. The objective of this work is to develop a stochastic rainfall generator capable of modeling precipitation at a high temporal resolution.

Orateur: BERNARD, Anne

ID de Contribution: 8

Type: **Non spécifié**

Femmes et Mathématiques : une comparaison transnationale des carrières universitaires en France et au Kazakhstan

vendredi 28 novembre 2025 13:30 (30 minutes)

Cette communication propose une analyse comparative des carrières universitaires en mathématiques en France et au Kazakhstan sous l'angle du genre. Dans les deux pays, les jeunes filles réussissent mieux que les garçons dans les disciplines scientifiques et poursuivent des études plus longues. Pourtant, elles restent minoritaires dans les filières universitaires de mathématiques et voient leur progression ralentir dès l'obtention d'un poste permanent. Ce paradoxe formation-carrière, observé dans des contextes nationaux très différents, invite à interroger les mécanismes sociaux et genrés qui structurent les trajectoires académiques.

À partir d'un corpus combinant données statistiques, bases de thèses, reconstitution de parcours académiques et entretiens biographiques, l'étude met en évidence trois modèles de trajectoires : l'excellence républicaine, où l'État joue un rôle moteur mais reproduit les rapports sociaux de sexe ; l'héritage scientifique, où les réseaux familiaux et professionnels favorisent la reproduction sociale et une évolution partielle du système de genre ; et l'affirmation féministe, où l'agentivité individuelle et collective des femmes contribue à transformer les rapports sociaux de genre.

Cette comparaison transnationale permet de comprendre comment se tissent égalité et inégalités dans des environnements contrastés, et d'interroger l'impact des résistances individuelles sur l'évolution du système global de genre.

Orateur: KARIMOVA, Zhanna (Centre Max Weber)

ID de Contribution: 9

Type: **Non spécifié**

Quantification of limit theorem for nearly unstable Hawkes process

vendredi 28 novembre 2025 16:00 (35 minutes)

Orateur: MASSAT, Benjamin

ID de Contribution: **10**

Type: **Non spécifié**

Session Poster + Goûter

vendredi 28 novembre 2025 17:10 (1h 20m)