2026 年　数学・数理科学グローバル講義 I （前期）

注）タイトルとアブストラクトが未定のものは分かり次第掲載します。

数学・数理科学グローバル特別講義1
講師： Jérémie Brieussel（Montpellier University、幾何学的群論分野）
講義日程：2026 年4月 13 日（月）～17 日（金） 各日 13:00－15:00
タイトル：Random walks on infinite groups
概要：A random walk is the sequence of products of independent elements of a group following a given probability law. A finitely generated group can be viewed as a geometric object by means of its Cayley graph, thus a random walk is a way to explore randomly the geometry of a group. What properties of the group are reflected in the random walk ? It turns out, and this is the aim of this course, that there are various connexions between characteristics of the random walk and algebraic, geometric, analytic and dynamical features of the group.
- Lecture 1: Kesten's theorem relating return probability to the Cheeger constant of isoperimetry.
- Lecture 2: Tail events and harmonic functions, entropy criterion for Liouville property.
- Lecture 3: Poisson boundary, ray criterion for identification.
- Lecture 4: Choquet-Deny groups are virtually nilpotent.
- Lecture 5: A panoramic view of finitely generated groups through the eyes of a random walker.
The course is aimed to be self-contained and will assume no specific prior knowledge.

数学・数理科学グローバル特別講義2
講師： Alberto Minguez（University of Vienna/University of Sevilla、数論分野）
講義日程：
4月 8 日（水） 10:00～12:00
4 月 10 日（金）15:00～17:00
4 月 13 日（月）10:00～12:00
4 月 15 日（水）10:00～12:00
4 月 17 日（金）15:00～17:00
タイトル：The unitary dual of p-adic reductive groups
概要：The classification of the unitary dual of a topological group is a problem of central importance in representation theory and harmonic analysis. Beyond its intrinsic interest, it governs the spectral decomposition of representations

and provides the local constituents that appear in many global constructions in modern number theory. In this course we will study the unitary dual of p-adic reductive groups through the example of GL(n,F), where F is a p-adic field. This setting allows one to treat concrete questions while encountering most of the phenomena that arise more generally. The course will begin with a brief introduction to smooth representations of p-adic groups, including cuspidal representations, parabolic induction, and basic structural results. A central step will be the classification of all irreducible smooth representations of GL(n,F). We will then investigate which of these representations are unitary, focusing on representations obtained by normalized parabolic induction and on the analysis of complementary series and their endpoints. The aim is to obtain a concrete understanding of this example while highlighting ideas that extend to general reductive groups.