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2027^{April} 2028^{March}

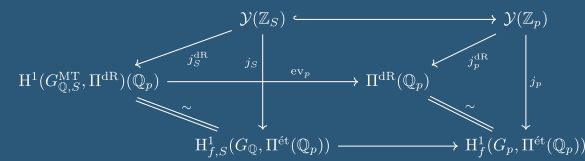
International year-long program at the **Research Institute for Mathematical Sciences**, Kyoto Japan

Arithmetic Homotopy Geometry

Season A April-June, 2027

Homotopy, rationality, and geometry

Homotopic methods have deepened our understanding of **rationality** phenomena, from **obstructions** to **height estimate**.



- Anabelian algorithms**
- Batyrev-Manin conjecture • Berkovich geometry • Brauer-Manin obstruction • Inter-universal Teichmüller theory
- Height estimates**
- Hilbert specialization • Hurwitz spaces • Malle conjecture • Noether Program • Heath-Brown-Serre conjecture
- Rational obstructions**
- Non-abelian Chabauty theory • Section conjecture...

Moduli spaces and new structure for **new geometry** and **new Galois model**.

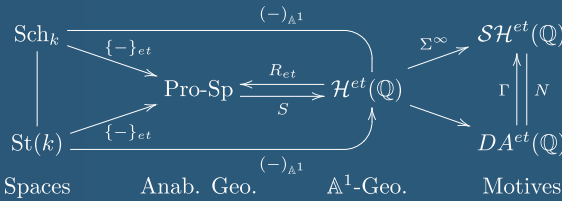
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Season B Sept-Nov, 2027

The homology-homotopy frontier in arithmetic geometry

The two arithmetic universalities frameworks, **motivic** and **anabelian homotopy theory** now increasingly overlap.



- Motives & Local systems**
- Abelian by central extension • Étale topological type • Ihara program • m-step unipotent quotient • m-step reconstruction • Mixed Hodge structures • Monodromy methods • p-adic Hodge techniques • pro-unipotent settings • Selmer sections • Tannaka symetries...
- Nearly-abelian reconstruction**
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- Non-abelian Chabauty**
-
- Special loci** of interest and anabelian-motivic **bridge** for a new interface.

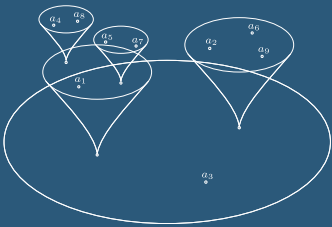
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Season C Feb-March, 2028

Combinatorial arithmetic geometry

Recent categorical approaches **refine structuring questions** of arithmetic homotopy theory (e.g., Ihara's and Oda's question)



- Combinatorial anabelian geometry**
- Braid groups • Cohomology of moduli spaces • Drinfel'd-Kohno Lie algebra • Grothendieck-Teichmüller theory • Graph complex • Hyperplane configurations • Johnson homomorphisms • Knots & prime invariants • Little 2-discs operads • Higher anabelian reconstructions...
- Number theory & topology**
-
- Operads & Quillen models**
-
- Mutual progress in anabelian **arithmetic** and topological **combinatorics**.

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Program & Registration
Workshops • Conferences • Mini-Courses • Visitors • Satellite events • Research Fellows...

With the support of the Research Institute for Mathematical Sciences of Kyoto University (RIMS), the Centre National de la Recherche Scientifique (CNRS), the Japan Society for the Promotion of Science (JSPS-Kakenhi), and the "Arithmetic & Homotopic Galois Theory" project (CNRS-RIMS and ENS-Lille)
Website of the year project: https://ahgt.math.cnrs.fr/AHG-year_27-28/