

Arithmetic, Algebra, and their Relation to Geometry: A Global Approach

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21-25 August 2023

Korean Institute for Advanced Study

Monday, August 21

Mathematical Lecture 1

9:45-10:55 **Minhyong Kim** (ICMS, Maxwell Institute, and KIAS)
Applications of History to Algebra and Geometry?

History, Mathematics, Philosophy: The complex issue of interpretation

11:10-12:20 **Ivahn Smadja** (Nantes Université)
A Prussian Brahmagupta: British Indology, Higher Mathematics and the Dragon's Seed of Hegelianism

Lunch

Magnitude and Number

14:00-15:10 **Reviel Netz** (Stanford University)
Why Euclid Can't Count

15:25-16:35 **Antoni Malet** (Institut d'Història de la Ciència (UAB)/Laboratoire SPHERE (UMR 7219, CNRS-Université Paris Cité)) ---**online**
Between Arithmetic, Algebra and Aeometry: The Arithmetization of Geometrical Magnitude in Early Modern Europe

16:50-18:00 General discussion launched by Hong Sung-Sa 홍성사

Tuesday, August 22

Arithmetic, Algebra and Euclidean Geometry

9:45-10:55 **Félix Fanglei Zheng** (independent scholar)

Jordanus Nemorarius's De numeris datis: An Algebra in the Form of Arithmetical Problems Demonstrated with Greek Geometrical Analysis-Synthesis Structure of Propositions

11:10-12:20 **Shuyuan Pan** (Institute for the History of Natural Sciences, Chinese Academy of Sciences, Beijing, China)

How were Chinese Resources Borrowed When the First Chinese Euclid was Established in the Early 17th Century?

Lunch

14:00-15:10 **Eleonora Sammarchi** (ETH Zürich)---**online**

Uses of Geometry in Relation to Algebra and Arithmetic. Some Case Studies Taken From Arabic Algebraic Texts (9th-12th c.).

Mathematical Lecture 2

15:25-16:35 **Michael Harris** (Columbia University) ---**online**

Galois theory by way of geometry

16:50-18:00 General discussion launched by Park Hyungju

Wednesday, August 23

Computation and geometry

9:45-10:55 **João Cortese** (University of São Paulo) ---**online**

Does a Number have a Form? On Blaise Pascal's Conception of the Relationship between Geometry and Arithmetic

11:10-12:20 **Young Sook OH** (independent scholar)

Arithmetic Operations and Geometric Justification in Joseon Society

Lunch

14:00-15:10 **Eunsoo Lee** (Seoul National University, South Korea)
Naming Mathematical Curves and Scientia Penitus Nova

15:25-16:35 **Nicolas Michel** (Wuppertal Universität)
Algebra as Resource, Algebra as Model. Some Reflections from the History of Enumerative Geometry.

16:50-18:00 General discussion launched by Karine Chemla and Reviel Netz

Thursday, August 24

Geometrical reasoning and operations

9:45-10:55 **Agathe Keller** (SPHERE, CNRS & Université Paris Cité)
Bhāskara II on Proofs and the Interpretation of Algebraical Operations Geometrically.

11:10-12:20 **Xiaohan Célestin Zhou** (The Institute for the History of Natural Sciences, Chinese Academy of Sciences)
Yang Hui's geometric reasoning using duan (pieces [of diagram]) to account for mathematical methods to solve algebraic equations

Lunch

14:00-15:10 **Karine Chemla** (SPHERE, CNRS & Université de Paris)
Polynomials in 13th-century China: A material transformation of diagrammatic work on equations?

15:25-16:35 General discussion launched by Kim Young Wook

Mathematical Lecture 3

16:50-18:00 **Don Zagier** (Max Planck Institut für Mathematik, Bonn, and International Centre for Theoretical Physics, Trieste)---**online**
Speculations in the history of mathematics

Friday, August 25

Interconnectednesses

9:45-10:55 **Jessica Carter** (Aarhus University)

Philosophical perspectives on the interconnections between arithmetic, algebra and geometry

11:10-12:20 **Emmylou Haffner** (ITEM, ENS Ulm)

Arithmetic in Algebra (and Conversely?)

Lunch

14:00-15:10 **Veronica Gavagna** (Università degli Studi di Firenze)---**online**

The relationship between algebra and geometry: from the medieval arabic tradition to the work of Rafael Bombelli

15:25-16:35 General discussion and conclusion of the workshop launched by Lee Sukjae