30th Applications of Computer Algebra - ACA 2025

Heraklion, Greece, July 14-18, 2025

NSC Session

NONCOMMUTATIVE SYMBOLIC COMPUTATION

<u>Organizers</u>:

Gérard H.E. DUCHAMP (Sorbonne University - Paris Nord, France)

Vincel HOANG NGOC MINH (University of Lille, France)

Hiroaki NAKAMURA (Osaka University, Japan)

Jianqiang ZHAO (The Bishop's School, USA)

<u>Scopes</u>: Symbolic computation plays an important role in the study of many important functions and their special values. By constructing noncommutative formal series based on words using these symbols, one can often discover key properties of these functions and values in a uniform way. On the other hand, noncommutative formal series can be considered as a generalization of language theory in theoretical computer science. As the algorithms and combinatorics of these series is based on those of words, these two fields naturally reinforce each other. They form an ideal framework for developing software based on computer algebra systems with rigor and efficiency. In particular, they allow the symbolic manipulation of several classes of special functions (such as Eulerian functions, hypergeometric functions, hyperlogarithms, harmonic sums, etc.) and of special values involved in solutions of differential equations.

We invite contributions with the following topics:
- Combinatorial Indexing and Calculus
- Ecalle's Mould Calculus
- Free Lie Algebras
- Hopf Algebras and Their Combinatorics
- Noncommutative Differential Equations
- Multiple Zeta Values (or Zeta Polymorphism) and Polylogarithms
- Representative Series (Sweedler's duals and their combinatorics)

<u>Call for abstracts</u>: If you are interested in giving a talk, you can send a proposal with title and abstract (2-3 pages) to both organizers of the session. Abstracts should be prepared using the [ACM CCA format](#). The deadline for the submission of an abstract is May 30th 2025. Abstracts will be reviewed as they come in, so early submission is encouraged!

<u>Talks and Speakers</u> (list in progress):
1. Olivier BOUILLOT (30 min)
2. V. Chiên BUI (30 min)
3. Steven CHARLTON (30 min)
4. Gérard H.E. DUCHAMP (30 min)
5. Jean-Yves ENJALBERT (30 min)
6. Herbert GANGL (30 min)
7. Nihar GARGAVA (?? min)
8. Darijl GRINBERG (?? min)
9. Vincel HOANG NGOC MINH (00 min)
10. Nao KOMIAYMA (30 min)
11. Kouhei KITAMURA (30 min)
12. François LEMAIRE (30 min)
13. Hiroaki NAKAMURA (00 min)
14. Q. Hoàn NGO (30 min)
15. Vu NGUYEN DINH (30 min)
16. Jianqiang ZHAO (30 min)