

Eilenberg-Schützenberger Machines, States, Σ -modules and Applications

mercredi 20 novembre 2024 12:00 (50 minutes)

The behavior of multiplicity automata is computable by means of the star of a matrix with noncommutative coefficients taken within a semiring (commutative or noncommutative). Our purpose here is to review applications of this unifying concept (Sweedler's duals, Topological algebras, Infinite iterated integrals). In passing, we indicate how to extend holomorphic-valued shuffle characters as, for example, polylogarithms [1]. In the end of the talk, we will describe a very simple two-state transducer producing the Collatz function.

This transducer is the seed of an award-winning recent paper [2].

Work in progress, joint with Didier Caucal (G. Eiffel Lab, Marne-la-Vallée), Nihar Gargava (IRMA, Strasbourg) and Pierre Simonnet (Univ. Corsica).

[1] Gérard H.E. Duchamp, Quoc Huan Ngô and Vincel Hoang Ngoc Minh, Kleene stars of the plane, polylogarithms and symmetries, TCS 800 (2019).

[2] D. Caucal and C. Rispal, On the Powers of the Collatz Function, Best Paper Award of MCU 2024, to be published in LNCS series by Springer Verlag.

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