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Resuming perturbative invariants of hyperbolic knots

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Given a hyperbolic knot, the Andersen-Kashaev state integrals are convergent integrals associated with certain triangulations of the knot complement. Their asymptotic expansion is a perturbative topological invariant conjectured to be resurgent and Borel summable by Garoufalidis, Gu, and Mariño.
Motivated by resuming these perturbative invariants, we define a new homology theory that allows us to construct exponential period integrals, whose asymptotic expansion recovers the original divergent series.
In this talk, I will explain the main ideas of our construction, and time permitting, how they can be generalized to study similar classes of exponential period integrals (e.g. Feynman integrals in the Baikov representation).

Based on a joint project with C. Wheeler (arXiv:2410.20973) and our ongoing work together with J. E. Andersen and M. Kontsevich.

Orateur: FANTINI, Veronica (Université Paris-Saclay)