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Non-abelian unipotent periods and monodromy of iterated integrals. (English)

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The author studies the Lie algebras associated to non-abelian unipotent periods on $P_{Q(\mu_n)}^1 \setminus \{0, \mu_n, \infty\}$. Let n be a prime number. For any $m \geq 1$, the numbers $\text{Li}_{m+1}(\xi_n^k)$ for $1 \leq k \leq (n-1)/2$ are assumed linearly independent over \mathbb{Q} in $\mathbb{C}/(2\pi i)^{m+1}\mathbb{Q}$. Let $S = \{k_1, \dots, k_q\}$ be a subset of $\{1, \dots, p-1\}$ such that if $k \in S$, then $p-k \in S$ and $(S+S) \cap S = \emptyset$ (the sum of two elements of S is calculated mod p). Then the author shows that in the Lie algebra associated to non-abelian unipotent periods on $P_{Q(\mu_n)} \setminus \{0, \mu_n, \infty\}$ there are derivations $D_{m+1}^{k_1}, \dots, D_{m+1}^{k_q}$ in each degree $m+1$ and these derivations are free generators of a free Lie subalgebra of this Lie algebra.

Reviewer: [Mina Teicher \(Ramat Gan\)](#)

MSC:

- [11G55](#) Polylogarithms and relations with K -theory
- [14F35](#) Homotopy theory and fundamental groups in algebraic geometry
- [11M41](#) Other Dirichlet series and zeta functions
- [17B56](#) Cohomology of Lie (super)algebras
- [19E20](#) Relations of K -theory with cohomology theories
- [19F27](#) Étale cohomology, higher regulators, zeta and L -functions (K -theoretic aspects)

Cited in 1 Document

Keywords:

polylogarithms; iterated integrals; monodromy; Lie algebras; periods; fundamental group

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