

Holonomic Techniques for Feynman Integrals



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Effective homology and periods of algebraic varieties

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The period matrix of a smooth complex projective variety encodes the isomorphism between its singular homology and its algebraic De Rham cohomology. Numerical approximations with sufficient precision of the entries of the period matrix allow to recover some algebraic invariants of the variety, such as the Néron-Severi group in the case of surfaces. In this talk, we will present a method relying on the computation of an effective description of the homology for obtaining such numerical approximations of periods of algebraic varieties, and showcase implementations for the case of hypersurfaces and elliptic surfaces.

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