

[Li, Si](#); [Lian, Bong H.](#); [Yau, Shing-Tung](#)

Picard-Fuchs equations for relative periods and Abel-Jacobi map for Calabi-Yau hypersurfaces. (English) [Zbl 1253.14036](#)

Am. J. Math. 134, No. 5, 1345-1384 (2012).

The authors aim to provide further development on the mathematical structures underlying inhomogeneous Picard-Fuchs equations and Abel-Jacobi maps.

More explicitly, they study the variation of relative cohomology for a pair consisting of a smooth projective hypersurface and an algebraic subvariety in it. Among other things, using the variation formalism, the authors prove that the relative periods of toric B-branes on Calabi-Yau hypersurface satisfy the enhanced GKZ hypergeometric system proposed in physics literature. The solution to the enhanced hypergeometric system is also provided.

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MSC:

- [14J32](#) Calabi-Yau manifolds (algebro-geometric aspects)
- [14C30](#) Transcendental methods, Hodge theory (algebro-geometric aspects)
- [14D05](#) Structure of families (Picard-Lefschetz, monodromy, etc.)
- [33C50](#) Orthogonal polynomials and functions in several variables expressible in terms of special functions in one variable
- [81T30](#) String and superstring theories; other extended objects (e.g., branes) in quantum field theory

Cited in **13** Documents

Keywords:

[Picard-Fuchs equations](#); [Abel-Jacobi map](#); [GKZ-hypergeometric](#); [branes](#); [Calabi-Yau](#)

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