Green, Mark L.
Griffiths' infinitesimal invariant and the Abel-Jacobi map. (English) ⟨Zbl 0692.14003⟩
J. Differ. Geom. 29, No. 3, 545-555 (1989).

Let X be a hypersurface in $\mathbb{P}^n$. Let us name Noether-Lefschetz locus the locus of smooth subvarieties of X of a fixed codimension. - If $m \geq 3$ and one considers codimension one subvarieties of X the Lefschetz theorems show immediately that the $N - L$ locus is empty in all degrees. In higher codimension the situation is more interesting. There is the following conjecture due to *P. A. Griffiths* and *J. Harris*: On a general 3-fold X of degree ≥ 6, the Abel-Jacobi map α from algebraic 1-cycles on X homologically equivalent to zero to the intermediate Jacobian $J^2(X)$ is zero.

The author draws a three steps program for proving the above conjecture and does the first two, getting the following partial result: If X is a 3-fold as above then the image of α is contained in the set of torsion points of the intermediate Jacobian.

The proof is mainly based on an improvement of an infinitesimal invariant of normal functions introduced by *P. A. Griffiths* [Compos. Math. 50, 267-324 (1983; Zbl 0576.14009)] and a vanishing theorem for Koszul cohomology due to the author [J. Differ. Geom. 27, 155-159 (1988; Zbl 0674.14005)].

Reviewer: A.Del Centina

MSC:

14C30	Transcendental methods, Hodge theory (algebro-geometric aspects)
14K30	Picard schemes, higher Jacobians
14J99	Surfaces and higher-dimensional varieties
14C15	(Equivariant) Chow groups and rings; motives
14D05	Structure of families (Picard-Lefschetz, monodromy, etc.)

Cited in **5** Reviews
Cited in **30** Documents

Keywords:

triviality of Abel-Jacobi map; Noether-Lefschetz locus; codimension one subvarieties; algebraic 1-cycles; intermediate Jacobian

Full Text: DOI