

The specialization map for the Chow motive of a surfaces

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Abstract

For a complex surface with $p_g = 0$ the finite dimensionality (in the sense of S.I.Kimura) of its Chow Motive is known to be equivalent to Bloch's Conjecture on the vanishing of the Albanese Kernel. The Conservation Conjecture states that the vanishing cycle functor

$$\Psi : DM_{\mathbb{Q}}(\eta) \rightarrow DM_{\mathbb{Q}}(s)$$

where DM is the triangulated category of Voevodsky, S is the spectrum of a geometric DVR, η the generic point and s the closed point, is conservative. A result by J.Ayoub says that the above Conjecture implies that every constructible motive in $DM_{\mathbb{Q}}$ is Schur- finite, which is a major step in proving Bloch's Conjecture. In this talk we will describe the behaviour of the transcendental part of the motive of a surface under the specialization map in a smooth projective family $\mathbb{C}alX \rightarrow S$ of surfaces and show some applications to the case of complex K3 surfaces.