INSALATE DI MATEMATICA

Abstract weight filtrations

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IN THIS TALK

Weight filtrations have their origin in
"Théorie de Hodge: II, III" (1971, 74): While classical Hodge theory
yields pure Hodge structures on the cohomology groups of smooth projective
complex varieties, Deligne extends this by constructing a filtration on the
cohomology of an arbitrary complex variety such that the graded pieces are pure. He
refers to the resulting filtered objects as mixed Hodge structures. Mixed structures
later appeared also in other contexts, such as the theory of Galois representations,
and they share many features, for example they form abelian categories.
Weights are closely related to slopes: Both control when nonzero morphisms are
admissible. The key difference is that slope filtrations and weight filtrations are
indexed in the opposite sense. Based on André's formalisation of slope filtrations, we
will set up an abstract framework within which the shared properties of mixed
structures become a formal consequence of this fact.

🔑words: weight and slope filtrations, mixed Hodge structures

"Obvious" is the most dangerous word in mathematics.
(Eric Temple Bell)

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