

INSALATE DI MATEMATICA



Abstract weight filtrations

11/02/2026

Carolyn Echter

University of
Regensburg

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)*

U9 - 09
4:45 pm (CET)