On multiplicative weight decompositions

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I will introduce the notion of "multiplicative weight decomposition". An important feature is the following : if a smooth projective variety has a multiplicative weight decomposition, then the expected Bloch–Beilinson filtration on its Chow ring is split. Moreover, unlike the splitting of the BB filtration, the notion of multiplicative weight decomposition is stable under product. Examples of varieties that admit a multiplicative weight decomposition are given by hyperelliptic curves (Gross–Schoen), K3 surfaces (Beauville–Voisin), and abelian varieties. I will explain why hyperKaehler varieties are expected to have a multiplicative weight decomposition by showing that Hilbert schemes of points on K3 surfaces do have such a decomposition.