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On the dimension of the Voisin Sets

Let A be a complex abelian variety of dimension g we consider the set $V_k(A)$ consisting of points $x \in A$ such that the zero-cycle $x - 0_A$ is k -nilpotent with respect to the Pontryagin product in the Chow group. These sets were introduced by Claire Voisin. She showed that if $g \geq 2k - 1$ then $\dim V_k(A) \leq k - 1$ and $V_k(A)$ is countable for a very general A . We study in particular the locus $V_{g,2}$ in the moduli space A_g of abelian varieties of dimension g with a fixed polarization, where $V_2(A)$ is positive dimensional. We prove that if $g \geq 3$ an irreducible subvariety $Y \subset V_{g,2}$, such that for $y \in V_{g,2}$ there is a curve in $V_2(A)$ generating A satisfies $\dim Y \leq 2g - 1$. The hyperelliptic locus shows that this bound is sharp. The result was obtained in collaboration with Elisabetta Colombo and Juan Carlos Naranjo.

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Alle Interessierten sind herzlich eingeladen.