

Rational Hodge isometries of hyper-Kähler varieties of $K3[n]$ -type are algebraic

Thursday, 16 June 2022 10:00 (1 hour)

Let X and Y be compact hyper-Kähler manifolds deformation equivalent to the Hilbert scheme of length n subschemes of a $K3$ surface. A cohomology class in their product $X \times Y$ is an analytic correspondence, if it belongs to the subring generated by Chern classes of coherent analytic sheaves. Let f be a Hodge isometry of their second rational cohomologies with respect to the Beauville-Bogomolov-Fujiki pairings. We prove that f is induced by an analytic correspondence. We furthermore lift f to an analytic correspondence F between their total rational cohomologies, which is a Hodge isometry with respect to the Mukai pairings, and which preserves the gradings up to sign. When X and Y are projective the correspondences f and F are algebraic.

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