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Fibrations of projective irreducible symplectic manifolds

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Given a projective hyperkaehler manifold M of dimension 2n, a projective manifold X and a surjective holomorphic map f:M -> X with connected fibers of positive dimension, we prove that X is biholomorphic to the projective space of dimension n. The proof is obtained by exploiting two geometric structures at general points ofX: the affine structure arising from the action variables of the Lagrangian fibration f and the structure defined by the variety of minimal rational tangents on the Fano manifold X.

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