ABSTRACT. We develop the foundation of the *complex symplectic geometry* of Lagrangian subvarieties in a hyperkähler manifold. We establish a characterization, a Chern number inequality, topological and geometrical properties of Lagrangian submanifolds. We discuss a category of Lagrangian subvarieties and its relationship with the theory of Lagrangian intersection.

We also introduce and study extensively a normalized *Legendre* transformation of Lagrangian subvarieties under a birational transformation of projective hyperkähler manifolds. We give a *Plücker* type formula for Lagrangian intersections under this transformation.