An introduction to Hodge theory

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Abstract:

We will introduce Kähler varieties, and the de Rham and Betti cohomology. We will define the abstract notion of Hodge structure and we will show that for all i the Betti cohomology $H^i(X, \mathbb{C})$ of a Kähler manifold X admits a weight i Hodge structure. To conclude, we will build the Jacobian variety of a smooth complex curve.

Prerequisites:

Notions of sheaves and of cohomology of a topological manifold. Notions of complex varieties and of complex analysis (we will recall the definition of differential form).

References:

1. C.Voisin, *Théorie de Hodge et géométrie algébrique complexe*
2. Ph.Griffiths and J.Harris , *Principles of algebraic geometry*