

INSALATE DI MATEMATICA

presents

29/01/2025

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*First order deformations and
the Griffiths infinitesimal invariant*



Abstract:

The theory of deformations of complex structures plays an important role in algebraic geometry, whose central problem is the local study of families of complex manifolds. This study of families is useful for example in moduli space theory, where it can give information about the local structure of a moduli space at a fixed point. Within this framework, we will give a general picture of what a first order deformation is, explaining the correspondence given by the Kodaira-Spencer map. Then, we will focus on families of algebraic curves and the associated Jacobian fibration. Precisely, we will see the construction of the infinitesimal invariant defined by Griffiths; a powerful tool that allows to measure the infinitesimal variation of the Abel-Jacobi map. Finally, through an explicit result, we will highlight its properties, and we will discuss the Griffiths' formula for its computation.

Keywords:

First order deformations · Algebraic curves · Abel-Jacobi map · Infinitesimal invariant

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U5-3014
04:30 pm (CET)



*"Obvious" is the most dangerous word in mathematics.
(Eric Temple Bell)*