Complex manifolds

Gioele Berto
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Zoom Meeting:
https://unipd.zoom.us/j/82468773306?pwd=MkJkdmFkbGZhWWZqTHZDTnQ2a2c0Zz09

Abstract

In this seminary we want to introduce complex manifolds, as well as differential forms on such manifolds.

In the first part, after recalling the definition of manifold, we define vector bundles and sections on them. We present a very important vector bundle, that being the real tangent bundle $T_{X,\mathbb{R}}$, and we describe its elements in a natural way. We define differential forms and then we look at complex manifolds.

In the second part we introduce the concept of almost complex structure: this will allow us to give a very useful basis to $T_{X,\mathbb{R}} \otimes \mathbb{C}$. Using this last result, we define two operators, ∂ and $\overline{\partial}$, and we show some of their properties.

Finally, we give some examples of complex manifolds.

Bibliography

C. Voisin, *Hodge Theory and Complex algebraic Geometry, I.* Cambridge University Press, 2002.