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Cohomology in Algebraic geometry

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Abstract

In this talk we will briefly touch upon the topic of cohomology in algebraic geometry. In particular we will note that there are historically at least two reasons for why one should care about cohomology in the context of algebraic geometry. The first one is coming from complex analysis, where one can deduce the existence of a meromorphic function with prescribed poles using cohomological methods, this is known as the Cousin problem. These ideas then lead to the theory of coherent cohomology. The second reason is arithmetical and is about counting solutions of polynomial equations over finite fields, this thread of ideas is known as the Weil conjectures (now a theorem of Grothendieck, Deligne,...). It leads to the idea of the so-called Weil cohomology theory, which should in some way play the role of singular cohomology in algebraic geometry.

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