



Cousin complexes and applications

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In this thesis, the class of modules whose Cousin complexes have finitely generated cohomologies are studied as a subclass of modules which have uniform local cohomological annihilators and it is shown that these two classes coincide over local rings with Cohen-Macaulay formal fibres. This point of view enables us to obtain some properties of modules with finite Cousin complexes and find some characterizations of them.

In this connection we discuss attached prime ideals of certain local cohomology modules in terms of cohomologies of Cousin complexes. In continuation, we study the top local cohomology modules with specified set of attached primes.

Our approach to study Cousin complexes leads us to characterization of generalized Cohen-Macaulay modules in terms of uniform annihilators of local cohomology. We use these results to study the Cohen-Macaulay loci of modules and find two classes of rings over which the Cohen-Macaulay locus of any finitely generated module is a Zariski-open subset of the spectrum of the ring.

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