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On Quasi-Buchsbaum Modules

An Application of Theory of FLC-modules

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Introduction

One of the main purposes of this article is to give a perspective of the theories of the rings and modules called "rings/modules of FLC" in this article or generalized Cohen-Macaulay rings or modules in [S=T=C]. They have been developed for the recent one and a half decade years under the influence of the advance of the theory of Buchsbaum rings/modules.

Most of the objects are closely related to Cohen-Macaulay rings/modules. Our discussion is based mainly on the study of Koszul complex developed in [S_2], [S_3], [S_4], [S_5], [S_6] and [G=S] and our main technique had been crystallized from them. In the study of modules of FLC, we have another powerful notion—u.s.*d*-sequences. Since the topic related to it has been already presented in [G=Y] in complete form and also in [S_8] in relation with canonical duality, we never mention it so much any more in this article.

Among the modules of FLC, Buchsbaum modules are of most importance. The theory has achieved a remarkable progress in recent years. Not merely as a derived notion from Cohen-Macaulay, but as the independent objects, they revealed to be endowed with an exquisite structure. In Section 2, we allot some space to demonstrate some results related to the Koszul homology of s.o.p. of Buchsbaum modules that are suppressed in the Cohen-Macaulay cases because of the vanishing homology modules.

Another much important aim of us is to develop a theory of a class of modules called quasi-Buchsbaum modules based on and making very best use of the observations on the modules of FLC in the preceding part of this article. Some part of the main theorem had already been announced in [S_6] and a proto-type of the proof had been given in [S_4] which is available only directly from the author. We give a new and rather improved version and proof of it.

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