

ON NON-COMMUTATIVE CREPANT RESOLUTIONS OF SOME TORIC RINGS

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The notion of non-commutative crepant resolution (= NCCR) was introduced by Van den Bergh [VdB]. An NCCR is a non-commutative algebra derived equivalent to the usual crepant resolution for some nice singularities. This notion has been investigated in several areas, e.g., algebraic geometry, representation theory of algebras and mathematical physics. For example, an NCCR of a 3-dimensional Gorenstein toric ring can be obtained as the path algebra with relations arising from a dimer model, which is a bipartite graph on the real two-torus (e.g., [Bro, IU]). However, the existence of NCCRs for higher dimensional toric rings is not known except few cases (see e.g., [ŠpVdB1, ŠpVdB2]).

In my poster presentation, I will show the existence of NCCRs for some higher dimensional toric rings using the framework of Hibi rings which are special classes of toric rings arising from partially ordered sets. In addition, I will explain that the structure of the associated partially ordered set plays an important role for constructing an NCCR. This poster presentation is based on [HN, Nak].

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