Almost Gorenstein Rees algebras

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My talk is based on the recent research jointly with S. Goto, N. Matsuoka, M. Rahimi, H. L. Truong, and K.-i. Yoshida ([3, 4, 5, 6, 7]). The purpose of this talk is to investigate the question of when the Rees algebras of ideals are almost Gorenstein rings. Almost Gorenstein rings are one of the candidates for a class of Cohen-Macaulay rings which may not be Gorenstein but still good, hopefully next to the Gorenstein rings. The notion of these local rings dates back to the paper [1] of V. Barucci and R. Fröberg in 1997, where they dealt with one-dimensional analytically unramified local rings and developed a beautiful theory. However, since their notion is not flexible enough to analyze analytically ramified rings, in 2013 S. Goto, N. Matsuoka, and T. T. Phuong [2] extended the notion to arbitrary Cohen-Macaulay local rings but still of dimension one. Finally, in 2015 S. Goto, R. Takahashi and N. Taniguchi [9] proposed the definition of almost Gorenstein graded/local rings of higher dimension.

Possessing in [8] one of its roots, the theory of Rees algebras has been satisfactorily developed and nowadays one knows many Cohen-Macaulay Rees algebras. Among them Gorenstein Rees algebras are rather rare ([10]). Nevertheless, although they are not Gorenstein, some of Cohen-Macaulay Rees algebras are still good and could be *almost Gorenstein graded* rings, which we would like to report in this talk.

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