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Title: Remarks on big Cohen-Macaulay algebras and on ramification over log-regular rings

Abstract: I will discuss recent perfectoid techniques, joint work with L. Ramero, constructions of weakly functorial big Cohen-Macaulay algebras, the direct summand conjecture over log-regular rings, a derived variant of the monomial conjecture, and statements on ramified extensions of log-regular rings which in the case of a finite generically étale extension $B$ of a regular ring $A$ give that the diagonal idempotent in $B_K \otimes_K B_K, K = \text{Frac}(A)$, lifts to $\text{Hom}_A(B, A) \otimes \text{Hom}_A(B, A)$. 