DG homological algebra: Application to a question in commutative algebra

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ABSTRACT. A finitely generated module C over a commutative noetherian ring R is *semidualizing* if $\operatorname{Hom}_R(C,C) \cong R$ and $\operatorname{Ext}_R^{i \geq 1}(C,C) = 0$. In this talk, we sketch the complete answer to one of the major open questions about semidualizing modules, posed by Vasconcelos in 1974. Our proof relies on certain aspects of deformation theory for DG modules over a finite dimensional DG algebra.