1147-13-331 **Yuji Yoshino*** (yoshino@math.okayama-u.ac.jp), Okayama, Japan. *Lifting DG modules.*

Let $A \to B$ be a DG algebra homomorphism between non-negatively graded commutative DG algebras. A DG B-module N is said to be liftable to A if there is a DG A-module M with $N \cong M \otimes^{\mathrm{L}}_A B$ in the derived category $D(B)$. Similarly N is called weakly liftable if N is a direct summand of $M \otimes^{\mathrm{L}}_A B$ for some M. In this talk I am interested in one-variable extension DG algebras, i.e. $B = A\langle X\rangle$ where X is a variable of positive degree. We have recently obtained the following results.

[Nasseh-Yoshino (2018)] Assume that the degree $|X|$ is odd. Then a DG B-module N is weakly liftable to A if $\mathrm{Ext}^{|X|+1}_B(N,N) = 0$.

[Ono-Yoshino (2018)] Assume $|X|$ is even. Then a DG B-module N that is bounded below is liftable to A if $\mathrm{Ext}^{|X|+1}_B(N,N) = 0$.

The following conjecture implies an affirmative answer to the Auslander-Reiten conjecture for commutative noetherian rings.

Conjecture: Let B be an extension DG algebra $A\langle X_1, X_2, \ldots\rangle$ of A with countably many variables of positive degree. Then a DG B-module N of bounded below is weakly liftable to A if $\mathrm{Ext}^i_B(N,N) = 0$ for all positive i. (Received January 20, 2019)