Conférence
« ARTA III : Avancées en théorie des représentations des algèbres »
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Meeting
"ARTA III. Advances in Representation Theory of Algebras"
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The extended degree zero subalgebra of the Ext algebra of a linear module

Dan Zacharia[*]

Let $\mathbb{k}$ be a field and let R be a Koszul $\mathbb{k}$-algebra. Let M be a linear $\mathbb{k}$-module and let Γ be the Ext-algebra of M. View Γ as a bigraded algebra with the bigrading induced by the homological degree and by the internal grading of M, that is

$$\Gamma = \mathrm{Ext}_R^*(M, M) = \bigoplus_{n \geq 0} \bigoplus_{i \in \mathbb{Z}} \mathrm{Ext}_R^n(M, M)_i.$$

We consider next *the extended degree zero subalgebra* Δ_M of Γ,

$$\Delta_M = \bigoplus_{n \geq 0} \mathrm{Ext}_R^n(M, M)_0.$$

So Δ_M is generated by all the homogeneous elements of Γ having internal degree zero. It turns out that the extended degree zero subalgebra can be used to obtain a characterization of the graded center of a Koszul algebra. I will also present some other applications of the ideas involved.

Joint work with Ed Green and Nicole Snashall.

[*]Department of Mathematics, Syracuse University, 215 Carnegie Bldg., Syracuse, NY 13244, USA.