Split-by-nilpotent extensions algebras and stratifying systems

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Let $\Gamma$ and $\Lambda$ be artin algebras such that $\Gamma$ is a split-by-nilpotent extension of $\Lambda$ by a two sided ideal $I$ of $\Gamma$. Consider the change of rings functors $G := r_\Lambda I_\Gamma \otimes \Lambda - : \text{mod}(\Lambda) \to \text{mod}(\Gamma)$ and $F := I_\Lambda \otimes I_\Gamma - : \text{mod}(\Gamma) \to \text{mod}(\Lambda)$. By assuming that $I_\Lambda$ is projective, we find the necessary and sufficient conditions under which a stratifying system $(\Theta, \leq)$ in $\text{mod}(\Lambda)$ can be lifted to a stratifying system $(G\Theta, \leq)$ in $\text{mod}(\Gamma)$. Furthermore, by using the functors $F$ and $G$, we study the relationship between their filtered categories of modules; and some connections with their corresponding standardly stratified algebras are stated.

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