Kac's Theorem for a class of string algebras of affine type $\mathbf{C}$

Quiver representation theory and Lie theory are closely related via Gabriel's Theorem, Kac's Theorem and Dlab-Ringel's Theorem. When a quiver (i.e. an oriented simply laced graph) Q is of finite representation type, Gabriel proved that a quiver is of finite representation type if and only if Q is Dykin and the map sending a representation X to its dimension vector provides a one-to-one correspondence between the isomorphism classes of indecomposable representations of Q and the positive roots of Q . The latter was generalised by Kac to any quiver. For non-simply laced graphs of finite or affine types, Dlab-Ringel generalised Gabriel's Theorem, using modulated (or valued) quivers.

Recently, Geiss-Leclerc-Schröer introduced a class of Iwanaga-Gorenstein algebras H via quivers Q with relations associated with symmetrizable Cartan matrices and studied τ-locally free H-modules. Among other things, they proved that when the Cartan matrix is of finite type, there is a one-to-one correspondence between the dimension vectors of indecomposable τ-locally free H-modules and the positive roots of the associated Lie algebra and conjectured that Kac's Theorem holds for any H.

In this talk, I will describe the Auslander-Reiten quivers of some string algebras of affine type $\mathbf{C}$, which are Iwanaga-Gorenstein algebras H associated to Cartan matrices of affine type $\mathbf{C}$ and confirm GLS-conjecture for this case.