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*Graduated inclusions between simply-laced semi-simple Lie algebras: a description with unit forms*

Denote by  $\Delta$  and  $\Gamma$  two simply-laced *Dynkin types*, that is, disjoint unions of simply-laced Dynkin diagrams, and by  $g(\Delta)$  and  $g(\Gamma)$  the semi-simple Lie algebras of that type and recall that they are graduated by the root spaces  $g(\Delta)_\alpha$ .

When does there exist a *graduated* inclusion  $\varphi: g(\Delta) \hookrightarrow g(\Gamma)$  (here graduated means: there exists a linear map  $f$  such that  $\varphi(g(\Delta)_\alpha) \subseteq g(\Gamma)_{f(\alpha)}$ )?

We translate this question into the language of *unit forms*, that is, integer quadratic forms  $q: \mathbb{Z}^n \rightarrow \mathbb{Z}$  satisfying  $q(c_i) = 1$  for each canonical base vector  $c_i$ . This enables us to give a complete answer to the previous question.

The talk will present results from a joint work with José Antonio de la Peña.