

# Abstract:

Dynkin diagrams are a useful tool for the representation of metric qualities of a root lattice relevant to some Lie algebra. We study an action of  $\text{ad}(\mathfrak{h})$  on the subalgebras of  $\mathfrak{gl}_n\mathbb{C}$  to find their roots and to manage their classification. We are focused on so-called simple roots. We introduce a certain linear functional to make an ordering of the set of the roots. Also we define the Killing form and we identify  $\mathfrak{h}^*$  to a Euclidian space. It is shown that the geometry on this space is strongly restricted by the general characteristics of the root lattices. We discuss all the settings between couples of the simple roots and we introduce a notation for the construction of Dynkin diagrams. Finally, we prove the main classification theorem and we generalize some ideas of its proof.