

ON NORMALIZERS AND CENTRALIZERS OF COMPACT LIE GROUPS.
APPLICATIONS TO STRUCTURAL PROBABILITY THEORY

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Abstract: The concept of operator stability on finite-dimensional vector spaces \mathbf{V} was generalized in the past into several directions. In particular, operator-semistable and self-decomposable laws and self-similar processes were investigated and the underlying vector space \mathbf{V} may be replaced by a simply connected nilpotent Lie group \mathbf{G} . This motivates investigations of certain linear subgroups of $GL(\mathbf{V})$ and $Aut(\mathbf{G})$, respectively, the *decomposability group* of a full probability μ and its compact normal subgroup, the *invariance group*.

Using some basic properties of algebraic groups, the structure of normalizers and centralizers of compact matrix groups is analyzed and applied to the above-mentioned set-up, proving the existence and describing the shape of *exponents* and of *commuting exponents* of (operator-) semistable laws.

Further applications are mentioned, in particular for operator self-decomposable laws and self-similar processes.

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