A QUICK INTRODUCTION TO SEMISIMPLE LIE ALGEBRAS

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The theory of finite-dimensional Lie algebras is a central topic in mathematics and has applications in many areas such as geometry, analysis and mathematical physics.

We will look at the classical structure theory of semisimple Lie algebras, via root systems and Dynkin diagrams. We will then describe their $\mathbb{Z}$-gradations in terms of parabolic subalgebras and see what a flag manifold is. There will be plenty of concrete examples.