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Varieties of Elementary Subalgebras of Submaximal Rank in Type A

Let G be a connected simple algebraic group over an algebraically closed field $\mathbf{k}$ of characteristic $p > 0$, and $\mathfrak{g} = \mathrm{lie}(G)$. We additionally assume that G is standard and is of type A_n. Motivated by the investigation of the geometric properties of the varieties $\mathbb{E}(r, \mathfrak{g})$ of r-dimensional elementary subalgebras of a restricted Lie algebra $\mathfrak{g}$, we will show in this article the irreducible components of $\mathbb{E}(\mathrm{rk}_p(\mathfrak{g}) - 1, \mathfrak{g})$ when $\mathrm{rk}_p(\mathfrak{g})$ is the maximal dimension of an elementary subalgebra of $\mathfrak{g}$.

Keywords: Elementary subalgebras, irreducible components.

MSC: 17B50, 16G10