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Elementary subalgebras of Lie algebras. Preliminary report.

We initiate the investigation of the projective variety $\mathbb{E}_r(\mathfrak{g})$ of elementary subalgebras of dimension r of a p -restricted Lie algebra \mathfrak{g} for some positive integer r . We view $\mathbb{E}_r(\mathfrak{g})$ as an interesting geometric structure attached to \mathfrak{g} , one whose computation and analysis appears accessible in many cases. We consider special classes of (p -restricted) representations of \mathfrak{g} which lead to algebraic vector bundles on $\mathbb{E}_r(\mathfrak{g})$. (Received August 25, 2011)