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**Composition Series of $\mathfrak{gl}(m)$ as a Module for its Classical Subalgebras
over an Arbitrary Field**

Let F be an arbitrary field and let $f: V \times V \rightarrow F$ be a non-degenerate symmetric or alternating bilinear form defined on a finite dimensional vector space over F . Let $L(f)$ be the subalgebra of $\mathfrak{gl}(V)$ formed by all skew-adjoint endomorphisms with respect to f . We find a composition series for the $L(f)$ -module $\mathfrak{gl}(V)$ and furnish multiple identifications for its composition factors.

Keywords: Lie algebra, bilinear form, irreducible module, composition series.

MSC: 17B10; 17B05