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Nilpotent Linear Operators

In this talk I will present recent results from joint work with Claus Michael Ringel (Bielefeld) on nilpotent linear operators and their invariant subspaces.

Let k be a field. We consider triples (V, U, T) where V is a finite dimensional k-space, U a subspace of V and $T\colon V \to V$ a linear operator with $T^n = 0$ for some n, and such that $T(U) \subseteq U$. Thus, T is a nilpotent linear operator on V and U is an invariant subspace with respect to T.

If $v = \dim V$ and $u = \dim U$ then (v, u) is the dimension pair of the triple (V, U, T). It turns out that whenver the nilpotency index n is at most 6, then interesting properties about an indecomposable triple (V, U, T) can be read off from the dimension pair.