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BOOK OF ABSTRACTS

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Elements in a ring which can be represented as a sum of idempotents and one nilpotent element

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The conditions that allow an element of an associative, unital, not necessarily commutative ring R, to be represented as a sum of (commuting) idempotents and one nilpotent element are analyzed. An element a of a ring R is s-nil-clean if it can be written in the following form:

$$a = e_1 + \cdots + e_s + n,$$

where elements $e_1, \ldots, e_s$ are idempotents and n is nilpotent. If an element a can be written in this form so that elements in this sum are pairwise commutative, we say that this element is strongly s-nil-clean. If every element in R is (strongly) s-nil clean, we say that R is a (strongly) s-nil-clean ring. We examine some interesting properties of s-nil clean rings.

On the spectrum of derangement graphs

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The spectrum of a graph is the multiset $\{\lambda_1, \ldots, \lambda_n\}$, where λ_i's are the roots of the characteristic polynomial of the adjacency matrix of given graph. Let G be a permutation group, a derangement graph is a graph with vertex set G and two vertices are adjacent if and only if they do not intersect. In this paper, we compute the spectrum of derangement graphs of well-known groups.