Zhang, Longhui; Shi, Huaguo; Zhang, Qingshan
On the structure of cyclic ring’s nil radical and nil ideal. (Chinese. English summary)
Zbl 07366863

Summary: This paper discusses the structure of nil radical and nil ideal of cyclic ring $R = \langle a \rangle \ (a^2 = ka, k \neq 0)$. The main conclusions are as follows: (1) let $|R| = \infty$, then $K(R) = \{0\}$, and $\{0\}$ is the only nil ideal of $R$; (2) let $|R| = n > 1$, $1 \leq k < n$, then the nil radical of $R$ is $K(R) = \langle \mu(n, k)a \rangle$, whose order is $\frac{n}{\mu(n, k)}$, and all nil ideals of $R$ are $\langle \lambda \mu(n, k)a \rangle$, where $\lambda$ is the normal factor of $\frac{n}{\mu(n, k)}$; (3) let $|R| = n > 1$, $1 \leq k < n$, $\sigma(n, k) = s \geq 1$, then $K(R) = \bigcap_{i=1}^{s} \langle p_i a \rangle$, where $p_i, i = 1, 2, \cdots, s$ is a normal prime factor of $n$ which can’t divide $k$.

MSC:
16N40 Nil and nilpotent radicals, sets, ideals, associative rings

Keywords:
cyclic ring; nil radical; nil ideal