

$R[X]_A$ of zero-dimensional reduced rings

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Let R be a commutative ring with identity and let $R[X]$ be the polynomial ring over R . Consider the following two subsets of $R[X]$:

$$N := \{f \in R[X] \mid c(f) = R\} \text{ and} \\ U := \{f \in R[X] \mid f \text{ is a monic polynomial}\}.$$

Then N and U are multiplicative subset of $R[X]$, so we obtain the rings $R[X]_N$ and $R[X]_U$, which are called the *Nagata ring* of R and *Serre's conjecture ring* of R respectively. The Nagata rings and the Serre's conjecture rings has been researched actively.

In this talk, we investigate the new subring $R[X]_A$ of Nagata ring and Serre's conjecture ring and examine following problems:

- (1) If $R[X]_A$ is a PIR, then is R a PIR? What about the converse?
- (2) If $R[X]_A$ is an arithmetical ring, then is R an arithmetical ring? What about the converse?

References

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